Cite No. 1.

PATENT ABSTRACTS OF JAPAN

(11)Publication number : 2001-332006
(43)Date of publication of application : 30.11.2001

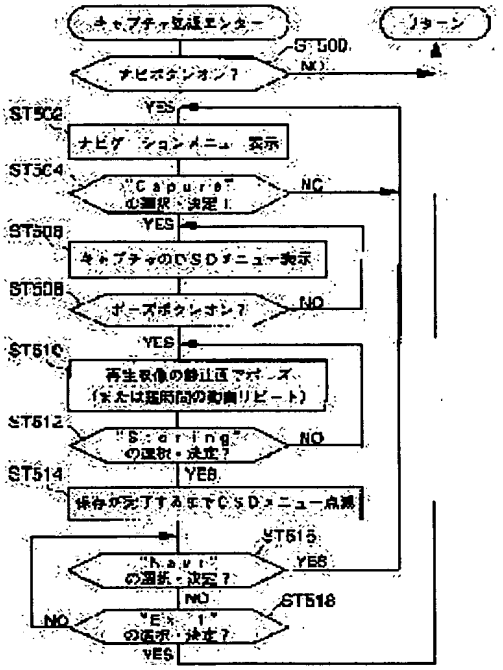
(51)Int.Cl. G11B 19/02
G06F 3/00

(21)Application number : 2000-145377
(22)Date of filing : 17.05.2000

(71)Applicant : TOSHIBA CORP
(72)Inventor : SHIRAISHI RYUICHI
FUJIWARA SHIRO

(54) BACKGROUND IMAGE CAPTURING SYSTEM

(57)Abstract:
PROBLEM TO BE SOLVED: To provide a background image capturing system which enables a user to freely utilize his or her desired still pictures (or short-time repeating animation images) as background images.
SOLUTION: A prescribed navigation menu is displayed (ST500 to ST502) by the user's operation and a prescribed capture menu is displayed (ST504 to ST506) from the navigation menu by the user's operation. The still picture which is part of the video reproduced from a DVD disk is captured as the background image (ST508 to ST514). Such system is so constituted that the captured background image can be utilized as the background image when the recorded videos are not reproduced from the disk (in a standby state prior to the start of reproduction or in a stop state).



LEGAL STATUS

[Date of request for examination]

[Date of sending the examiner's decision of rejection]

[Kind of final disposal of application other than the examiner's decision of rejection or application converted registration]

[Date of final disposal for application]

[Patent number]

[Date of registration]

[Number of appeal against examiner's decision of rejection]

[Date of requesting appeal against examiner's decision of rejection]

[Date of extinction of right]

Copyright (C); 1998,2003 Japan Patent Office

* NOTICES *

Japan Patent Office is not responsible for any
damages caused by the use of this translation.

1.This document has been translated by computer. So the translation may not reflect the original precisely.

2.**** shows the word which can not be translated.
3.In the drawings, any words are not translated.

CLAIMS

[Claim(s)]
[Claim 1] An image from an information media The recording information to include A playback means to reproduce The regenerative apparatus which it has; a predetermined navigation menu The capture menu display means on which a predetermined capture menu is displayed from the navigation menu display means and the; aforementioned navigation menu to display; It has a background-image taking-in means to incorporate said a part of image reproduced from said information media as a background image. Background-image incorporation equipment characterized by constituting the background image incorporated by said background-image taking-in means so that it can use as a background image of said regenerative apparatus while not reproducing said recording information from said information media.
[Claim 2] Equipment according to claim 1 characterized by constituting said background-image taking-in means so that the static image at the time of making the image of the recording information reproduced by said playback means halt may be incorporated as said background image.
[Claim 3] Equipment according to claim 1 characterized by constituting said background-image taking-in means so that the animation which made some animations of the image of the recording information reproduced by said playback means repeat may be incorporated as said background image.
[Claim 4] Equipment given in any 1 term of claim 1 characterized by including a means by which said background-image taking-in means notifies a user of it being [of said background image] under taking in thru/or claim 3.
[Claim 5] It is what is applied to the equipment which reproduces the recording information which includes an image from an information media. Display a predetermined navigation menu by actuation of a user, and a predetermined capture menu is displayed from said navigation menu by actuation of a user. In the system which incorporates some of still pictures or animations by which a short-time repeat is carried out of said image reproduced from said information media as a background image The background-image incorporation system characterized by constituting said incorporated background image so that it can use as a background image of said equipment while not reproducing said recording information from said information media.
[Claim 6] It is the approach used with the equipment which reproduces the recording information which includes an image from an information media. Display a predetermined navigation menu by actuation of a user, and a predetermined capture menu is displayed from said navigation menu by actuation of a user. While incorporating some of still pictures or animations by which a short-time repeat is carried out of said image reproduced from said information media as a background image and not reproducing said recording information from said information media The background-image incorporation approach characterized by constituting said incorporated background image so that it can use as a background image of said equipment.

[Translation done.]

* NOTICES *

Japan Patent Office is not responsible for any
damages caused by the use of this translation.

1.This document has been translated by computer. So the translation may not reflect the original precisely.

2.**** shows the word which can not be translated.
3.In the drawings, any words are not translated.

DETAILED DESCRIPTION

[Detailed Description of the Invention]
[0001]
[Field of the Invention] This invention relates to the technique of a graphic user interface (GUI), and relates to the background-image incorporation system which can incorporate freely the part in the playback image from a disk (a still picture or animation of a short-time repeat) as a background image through GUI actuation especially.
[0002]
[Description of the Prior Art] In recent years, the DVD regeneration system corresponding to the animation which plays the optical disk which recorded digital data, such as an image and voice, is developed, and general spread is progressing accelarative in order to reproduce movie software, a music title (karaoke ****), etc. the subimage data with which MPEG 2 was supported to the animation compression method, it supported AC3 audio, the MPEG audio, Linear PCM, etc. to voice according to the MPEG 2 system layer, and the specification of this DVD carried out run length compression of the bit map data as an object for titles further, and rapid-traverse/-- control data (navigation pack) is already added to special playback, such as return, and it is constituted. Moreover, by this DVD specification, ISO9660 and a UDF bridge (micro UDF) are supported so that data can be read by computer. Furthermore, functions, such as a multi-angle-type function (function which reproduces only one for the angle type which wants to record [angle type] the video data of various angle types which carry out synchronization by time sharing, and to see it), and a menu facility (the spreadsheet program for menus: function of the menu display which added the navigation command and combined the video data (the main image) and the data for titles (subimage) of Maine), are incorporated, and the interactive way of enjoying oneself which is not until now can do by this DVD specification.
[0003] Here, there is a color substitute function (highlighting capability) of a carbon button which shows that the function which displays the carbon button chosen by a user's selection, and its carbon button were chosen in a menu facility. About a menu, the video manager menu domain (VMGM_DOM) has realized the title menu. And the VTS menu domain (VTSM_DOM) has realized a root menu, the audio menu, the subimage menu, the angle-type menu, the par TOOBU title (PTT) menu (or chapter menu), etc. Although a title maker can make these menus freely, when an audio menu, a subimage menu, an angle-type menu, and the PTT menu exist, he has to have a link function (call function) to these. The root menu call carbon button and the title menu call carbon button are equipped, it appears in TV monitor and the DVD player is made to demarcate a menu screen generally, as a user interface which calls the above-mentioned menu, when a user calls each menu.
[0004]
[Problem(s) to be Solved by the Invention] By the way, before a DVD player starts playback actuation, there are many to which a background image (still picture which usually contained the LOGO which shows the mere blue back or its player manufacturer) with the original player itself is outputted, or the player itself outputs an original screen saver image (animation containing easy animation).
[0005] However, as long as the above-mentioned background image is the thing of a proper and continues

using the player for the player, the same image will always be displayed to a user. However, if people repeat the same thing and continue being shown, they get bored, and another background image comes to become wanting.

[0006] This invention was made in view of the above-mentioned situation, and that purpose is offering the background-image incorporation system which enables it to use freely the image (a still picture or animation of a short-time repeat) which a user wishes to have as a background image.

[0007]

[Means for Solving the Problem] In order to attain the above-mentioned purpose, the background-image incorporation system concerning this invention is applied to the equipment (DVD player of drawing 1) which reproduces the recording information (VTSTT_VOBS) which includes an image from an information media (10). Here, a predetermined navigation menu (drawing 13) is displayed by actuation of a user (ST500-ST502 of drawing 19), a predetermined capture menu is displayed by actuation of a user from said navigation menu (ST504-ST506), and some of still pictures or animations by which a short-time repeat is carried out of said image reproduced from said information media are incorporated as a background image (ST508-ST514). In such a system, while not reproducing said recording information from said information media (the standby condition or idle state before playback initiation), said incorporated background image is constituted so that it can use as a background image of said equipment.

[0008]

[Embodiment of the Invention] Hereafter, with reference to a drawing, the background-image incorporation system concerning the gestalt of 1 implementation of this invention is explained.

[0009] Drawing 1 is a block diagram explaining the configuration of the DVD player into which the background-image incorporation system concerning the gestalt of 1 implementation of this invention was built. This DVD player (optical disk regenerative apparatus) 1 As shown in drawing 1 The MPU section 2, the MPEG decoder section 3, the D/A transducer 4 of audio data, the disk drive section 5 that performs information reading from the DVD disk 10, the system processor section 6, the work-piece memory section 7, the subimage decoder (SP decoder) section 8, the audio decoder section 9, the video memory section 11, (Video decoder section) It consists of an actuation key panel (and/or, remote controller) 12 which is the input device of user actuation, the video processor section 13, and internal bus 14 grade. The TV monitor (or video projector which is not illustrated) 20 is connected to the exterior of this player 1 through video I/F which an external speaker 17 is connected through the audio amplifier (or AV amplifier) which is not illustrated, and is not illustrated.

[0010] In MPU2 of drawing 1 , user interface creation section 2A, menu judging section 2B, and OSD processing section 2L and capture (image incorporation) processing section 2M grade are incorporated as a firmware, and data memory (data memory of application of OSD and others) 2C is prepared further. In MPU2, graphic remote control image storage section 2H and management information processing section 2I, multiprocessing section 2J, and translucent processing (or watermark processing) section 2K grade are incorporated as a firmware further again.

[0011] Although not illustrated, in MPU2, the program memory in which other firmwares (program which takes charge of processing of drawing 6 - drawing 11) were written is also prepared. Moreover, in the system processor section 6, data carving section 6A and memory I/F section 6B are prepared.

[0012] The fundamental flow of the data in the configuration of drawing 1 is as follows. That is, the MPU section 2 sends the target address and a lead instruction to the disk drive section 5. Then, the disk drive section 5 sends the packed data which read the target logical sector data to the system processor section 6 through the data input section which is not read and illustrated from the disk 10 according to the address and the instruction which were sent. Within the system processor section 6, data carving section 6A carves the sent packed data into packet data, and according to the contents (purpose) of data, video packet data (data by which MPEG encoding was carried out) are transmitted to the video decoder section 3, transmit audio packet data to the audio decoder section 9, and transmit subimage packet data to SP decoder section 8.

[0013] Moreover, in order that the MPU section 2 may process suitably, the header unit of the packs

(subimagery pack SP_ audio pack A_PCK, video pack V_PCK, PCK, etc.) of navigation pack NV_PCK and others is transmitted to the work-piece memory section 7 through memory I/F section 6B, and is saved there. Each packet data sent to each decoder section regenerates synchronizing with the value of the playback time stump in packet data (Presentation Time Stamp:PTS). Thereby, an animation with for example, an English voice + Japanese title (film) can be made to come out of and draw on the screen of the TV monitor 20.

[0014] Inside MPU2, the on-screen display (OSD) which offers a user interface for a user to operate it visually and check using the in-house data of data memory 2C is generated. This generation is performed by the firmware user interface generation section 2A, and the generated OSD data are saved in the video memory section 11. Moreover, menu judging section 2B which judges the class (a root menu, title menu, etc.) of menu picked out from the disk 10 is prepared in the interior of MPU2 in the form of a firmware. In addition, about the DS of the information recorded on the disk 10 of one sheet, it mentions later.

[0015] Drawing 2 is drawing explaining the hierarchy DS of the DVD disk used by the DVD menu display system concerning the gestalt of 1 implementation of this invention. Lead-in groove area is established in an inner circumference side, lead-out area is established in a periphery side, and a volume space 28 is formed in the DVD disk 10 between them so that it may illustrate. This volume space 28 contains volume / file structure information area 70, the DVD video area 71, and other record area 73 grades. Available information or other information (for example, computer information) which are not related to a video title set are recordable on the other record area 73 by the video title set VTS. This record area 73 may be deleted, if it is not indispensable and is not used. Volume / file structure area 70 is equivalent to the management domain set to ISO9660 and a UDF bridge. The video manager's VMG content is stored in the memory of a DVD player based on description of this area 70.

[0016] The above-mentioned area 70-73 is classified on the boundary of a logical sector. Here, 1 logical sector is defined as 2048 bytes, and 1 logical block is also defined as 2048 bytes. Therefore, 1 logical sector is defined as 1 logical block, a pair, etc. The DVD video area 71 includes management information called the video manager VMG and the contents information of one or more (a maximum of 99 pieces) video title set VTS#N.

[0017] File 74A of management information VMG consists of video manager information VMGI, video object set VMGM_VOBS for video manager menus (option), and backup VMGI_BUP of VMGI. VMGI Video manager information management table VMGI_MAT (not shown), Title search pointer table TT_SRPT, video manager menu PGCI unit table VMGM_PGCI_UT (not shown), Parental management information table PTL_MAIT (not shown), video title set attribute table VTS_ATRT (not shown), Text data manager TXTDT_MG (not shown), video manager MENYUSERU address table VMGM_C_ADT (not shown), And video MANEJAMENYUBIDEO object unit address map VMGM_VOBU_ADMAP (not shown) is included.

[0018] TT_SRPT contained in VMGI contains title search pointer table information TT_SRPTI (not shown) and one or more title search pointer TT_SRP. Each TT_SRP is recall type TT_PB_TY (in one sequential title of PGC) of an applicable title. One random PGC title, multi-PGC title, etc., Number AGL_Ns of angle types (not shown), par TOOBU title number (number of chapters) PTT_Ns (not shown), Parental ID-field TT_PTL_ID_FLD (not shown) of an applicable title, the VTS number VTSN (not shown), VTS title number VTS_TTN (not shown), and starting address VTS_SA (not shown) of VTS are included. The user actuation flag bit UOP0 which determines whether user actuation of a time search / time play is permitted in above-mentioned TT_PB_TY, and the user actuation flag bit UOP1 which decides whether to permit user actuation of a chapter search (PTT search) / chapter playback (PTT playback) can be described now.

[0019] On the other hand, file 74B of each video title set (at drawing 2 , it illustrates by VTS#N) consists of the video title set information VTSI which is the management information of the title, video object set VTSM_VOBS for video title set menus (option), video object set VTSTT_VOBS for video title set titles (video contents), and backup VTSI_BUP of VTSI. Any video object in each VTS has the same structure except for the difference in the application. The information that it is various for reproducing these data

with the video data compressed by MPEG specification, the audio (or it being incompressible) data compressed by predetermined specification, and the subimage data in which run length compression was carried out by the predetermined regulation is stored in each video title set VTS. In addition, the number of each file 74B which constitutes VTS is set to a maximum of 12 pieces. The above-mentioned files 74A and 74B are classified on the boundary of a logical sector.

[0020] Each management information VTSI of VTS Video title set information management table VTSI_MAT (not shown), Video title set PERT OBUTAITORUSACHI pointer table VTS_PTT_SRPT (not shown), Video title set program chain information table VTS_PGCIT, Video title set menu PGCI unit table VTSM_PGCI_UT (not shown), Video title set time map table VTS_TMAPT (not shown), Video title set menu cell address table VTSM_C_ADT (not shown), Video title set menu video object unit address map VTSM_VOBU_ADMAP (not shown), Video title set cell address table VTS_C_ADT (not shown) and video title set video object unit ADORESUMAPPU VTS_VOBU_ADMAP (not shown) are included.

[0021] In above-mentioned VTSM_PGCI_UT, each VTSM_PGCI_SRP contains category VTSM_PGC_CAT of the program chain for video title set menus including search pointer VTSM_PGCI_SRP of one or more program chain information for video manager menus. In this VTSM_PGC_CAT, the information on Menu ID that various menus are identified is stored.

[0022] Above-mentioned VTS_PGCIT contains video title set information table information VTS_PGCITI (not shown), one or more VTS_PGCI search pointer VTS_PGCI_SRP (not shown), and one or more video title set program chain information VTS_PGCI. Each VTS_PGCI (it only considers as the program chain information PGCI below) contains program chain general information PGC_GI, program chain command table PGC_CMDT (not shown), program chain programmed map PGC_PGMAP (not shown), cel playback information table C_PBIT (not shown), and cel positional information table C_POSIT (not shown).

[0023] Above-mentioned PGC_GI Contents PGC_CNT of PGC (not shown), PGC playback time amount PGC_PB_TM (not shown), PGC user actuation control PGC_UOP_CTL, PGC audio stream control table PGC_AST_CTLT (not shown), PGC secondary image stream control table PGC_SPST_CTLT (not shown), PGC navigation control PGC_NV_CTL (not shown), PGC secondary image pallet PGC_SP_PLT (not shown), Starting address PGC_CMDT_SA of PGC_CMDT (not shown), Starting address PGC_PGMAP_SA (not shown) of PGC_PGMAP, starting address C_PBIT_SA (not shown) of C_PBIT, and starting address C_POSIT_SA (not shown) of C_POSIT are included. The user actuation flag bits UOP0-UOP3 which determine the propriety of user actuation when PGC is reproduced in above-mentioned PGC_UOP_CTL, and UOP5-UOP24 can be described now.

[0024] On the other hand, the content (video contents) of each VTSTT_VOBS of VTS is specified by the video object (VOB_IDN#1, VOB_IDN#1, --, VOB_IDN#i) indicating one or more cels (C_IDN#1-#5, C_IDN#1-#2, --, C_IDN#1-#i), and the playback sequence of the cel shown by these VOB_IDN# is defined by PGC#1, PGC#2, --, PGC#k.

[0025] Drawing 3 is drawing explaining the hierarchy DS of the navigation pack recorded on the DVD disk of drawing 2 . The information on one or more program chains PGC is recorded by VTSTT_VOBS which is the set of the information which made the cel the unit. That is, one VTS consists of one or more PGC(s), one PGC consists of one or more programs, one program consists of one or more cels, and one cel consists of two or more video object units VOBU. The data of each cel are carved and recorded on two or more VOBU(s). Each VOBU has navigation pack NV_PCK in a head, and is constituted by the data packs (audio pack A_PCK, video pack V_PCK, subimagery pack SP_PCK, etc.) of still more various classes. Each pack consists of a pack header and one or more packets. Here, a pack is a smallest unit in the case of performing data transfer processing. On the other hand, the smallest unit which performs processing on logic is a cel, processings on logic (playback etc.) are performed in this unit, playback sequence can be changed by it or branching etc. can be performed.

[0026] Each navigation pack NV_PCK consists of a pack header, a system header, the packet header of a PCI packet, the substream ID of a PCI packet and playback control information PCI data, a packet header of a DSI packet, and the substream ID of a DSI packet and data retrieval information DSI data. DSI data

include DSI general information, seamless playback information, seamless angle-type information, VOBU retrieval information, synchronization information, etc. On the other hand, PCI data include PCI general information, non seamless angle-type information, the highlights information HLI, recording information, etc. PCI general information contains NV_PCK_LBN (not shown) which described the address of a navigation pack by the relative logical-block number, category VOBU_CAT (not shown) of Relevance VOBU, user actuation control VOBU_UOP_CTL of Relevance VOBU, playback start time VOBU_S_PTM (not shown) of Relevance VOBU, playback end time VOBU_E_PTM (not shown) of Relevance VOBU, end time VOBU_SE_E_PTM (not shown) of the sequence end contained in Relevance VOBU, cel elapsed time C_ELTM, etc.

[0027] The user actuation flag bits UOP3-UOP16 which determine the propriety of user actuation when Relevance VOBU is reproduced in above-mentioned VOBU_UOP_CTL, and UOP18-UOP24 can be described now. If it puts in another way, according to the content of the UOP bit of VOBU_UOP_CTL in NV_PCK, the class of usable key is specified during VOBU playback.

[0028] The highlights information HLI in PCI data consists of highlights general information, a carbon button color information table, and a carbon button information table. In the carbon button information table, each carbon button information contains carbon button positional information, contiguity carbon button positional information, and a carbon button command including one or more carbon button information (not shown). Carbon button positional information includes the color number information on a carbon button, the positional information (X-Y coordinate information) of a carbon button, the auto action mode information that shows selection/starting (action) condition of a carbon button.

[0029] For example, also when carrying out button grabbing from a menu [having reduced when a menu screen is reduced and two or more menus are indicated by simultaneous on 1 screen], it thinks. In this case, since a actual carbon button location (mark operated in case a user chooses a menu item) shifts to the case where it does not reduce, it is necessary to also correct the location data of a carbon button so that a cutback menu may be suited. Correction of this location data can be made based on the display position (for example, X-Y coordinate of the upper left corner of cutback menu display area) of the cutback menu on a screen, reduction percentage (one half, 1/4, etc.), and the carbon button positional information of drawing 3 .

[0030] In addition, in the DVD video system, in order to raise interactive nature, the spreadsheet program called navigation command is prepared. the carbon button command of drawing 3 -- a kind of a navigation command -- it is -- a carbon button -- starting (action) -- a corresponding navigation command is executed. This navigation command can be executed after playback of VOBU, and during navigation pack NV_PCK processing after playback of a cel before and after playback of a program chain, respectively.

[0031] Drawing 4 is drawing explaining the layered structure of the menu used by the class of menu information recorded on the DVD disk of drawing 2 , and the DVD player 1 of drawing 1 . This drawing is also a conceptual diagram explaining a response with a system menu and a user actuation function.

[0032] In a DVD player, the title menu and the root menu (main menu) are indispensable, a title menu is treated with a video manager menu (VMGM), and a root menu is treated with a video title set menu (VTSM).

[0033] As shown in drawing 3 , the video title set menu has the hierarchy composition constituted with a root menu and a menu with the various low order hierarchy. Here, the category (VTSM_PGC_CAT) of the program chain for video title set menus is constituted as follows. Namely, although not illustrated, 8 bits of low order of VTSM_PGC_CAT are assigned to the lower bit of a parental identification field. The following 8 bits are assigned to the high order bit of a parental identification field. Set that the following 4 bits are the reservation field, and a block type is specified by the following 2 bits. A block mode is specified by the following 2 bits, and the following 4 bits describe a menu identifier (menu ID), and he sets that the following triplet is the reservation field, and is trying to specify an entry type by 1 bit (the 32nd bit) of the last.

[0034] First, it counts from 4 bytes (32 bits) of high order bit, if the first entry type is 1b (binary 1), it is shown that an applicable program chain (PGC) is Entry PGC, and if it is 0b, it is shown that applicable

program chains are program chains other than Entry PGC.
[0035] The content of the subsequent 4-bit menu identifier (menu ID) is determined as follows. If the above-mentioned entry type is 0b, 0000b enters Menu ID, and when the above-mentioned entry type is 1b, the following binary codes enter Menu ID. That is, if it is a root menu, 0011b enters, if it is a subimage menu, 0100b enters, if it is an audio menu, 0101b enters, if it is an angle-type menu, 0110b enters, and if it is a par TOOBU title menu (chapter etc.), 0111b enters. The 4-bit binary code of menu identifiers other than these (menu ID) is reserved by other applications.
[0036] If the 2-bit block mode following the above-mentioned menu identifier (menu ID) is 00b, it is shown that it is not a program chain within an applicable block, if it is 01b, it is shown that it is the program chain of the beginning within an applicable block, if it is 10b, it is shown that it is a program chain under applicable block, and if it is 11b, it is shown that it is the program chain of the last within an applicable block. If the continuing 2-bit block type is 00b, it is shown that it is not a part of applicable block, and if it is 01b, it is shown that it is a parental block (block with which playback is allowed only under specific conditions). 8+8 bits of after that are a field where the information (flag bit train) for judging the playback conditions of a parental block is indicated.
[0037] Drawing 5 is drawing explaining a part of user actuation control information recorded on the DVD disk of drawing 2 . this drawing -- the user actuation control (UOP0, UOP1) by title playback type TT_PB_TY of drawing 2 , the user actuation control (UOP0-UOP24) by user actuation control PGC_UOP_CTL of drawing 2 , and the user actuation control (UOP0-UOP24) by user actuation control VOBU_UOP_CTL of drawing 3 -- the relation between each control flag (bit of UOP0-UOP24) and the user ability corresponding to them is shown selectively. Among 24 sorts of UOP(s), UOP0 specifies prohibition/authorization of the time amount playback and time amount retrieval by the user, and is contained in TT_PB_TY or PGC_UOP_CTL. Here, when a UOP bit was "0", user actuation was permitted (a graphic display O), and when a UOP bit is "1", user actuation shall be forbidden (a graphic display x).
[0038] In instantiation of drawing 5 , UOP1 specifies prohibition/authorization of the par TOOBU title playback by the user, and par TOOBU title retrieval, and is contained in TT_PB_TY or PGC_UOP_CTL. UOP2 specifies prohibition/authorization of the title playback by the user, and is contained in PGC_UOP_CTL. UOP3 specifies prohibition/authorization of a playback halt by the user, and is contained in PGC_UOP_CTL. UOP4 which is not illustrated specifies prohibition/authorization of the various GoUp actuation (actuation to which those numeric values etc. are made to increase when the numeric value in a title domain, the numeric value in menu space, or the numeric value of a program chain number is FFFFh) by the user, and is contained in VOBU_UOP_CTL. UOP5 specifies prohibition/authorization of the time amount retrieval or par TOOBU title retrieval by the user, and is contained in PGC_UOP_CTL or VOBU_UOP_CTL. UOP6 which is not illustrated specifies prohibition/authorization of program retrieval or head program retrieval, before being based on a user (precedence), and it is contained in PGC_UOP_CTL or VOBU_UOP_CTL. UOP7 which is not illustrated specifies prohibition/authorization of the program [degree (consecutiveness)] retrieval by the user, and is contained in PGC_UOP_CTL or VOBU_UOP_CTL. UOP8 specifies prohibition/authorization of the front scan (rapid traverse) by the user, and is contained in PGC_UOP_CTL or VOBU_UOP_CTL. UOP9 specifies prohibition/authorization of the back scan (already return) by the user, and is contained in PGC_UOP_CTL or VOBU_UOP_CTL. UOP10 specifies prohibition/authorization of the title menu call by the user, and is contained in PGC_UOP_CTL or VOBU_UOP_CTL.
[0039] UOP11 specifies prohibition/authorization of the root menu call by the user, and is contained in PGC_UOP_CTL or VOBU_UOP_CTL. UOP12 specifies prohibition/authorization of the subimage menu call by the user, and is contained in PGC_UOP_CTL or VOBU_UOP_CTL. UOP13 specifies prohibition/authorization of the audio (voice) menu call by the user, and is contained in PGC_UOP_CTL or VOBU_UOP_CTL. UOP14 specifies prohibition/authorization of the angle-type menu call by the user, and is contained in PGC_UOP_CTL or VOBU_UOP_CTL. UOP15 specifies prohibition/authorization of the par TOOBU title (chapter) menu call by the user, and is contained in PGC_UOP_CTL or

VOBU_UOP_CTL. UOP16 specifies prohibition/authorization of the resume actuation by the user, and is contained in PGC_UOP_CTL or VOBU_UOP_CTL. UOP17 specifies prohibition/authorization of various button grabbing (high order carbon button selection, low order carbon button selection, left carbon button selection, right carbon button selection, carbon button decision, or carbon button selection and decision) by the user, and is contained in PGC_UOP_CTL. UOP18 specifies prohibition/authorization of the still (still picture) off actuation by the user, and is contained in PGC_UOP_CTL or VOBU_UOP_CTL. UOP19 specifies prohibition/authorization of the pause (halt)-on actuation by the user, and is contained in PGC_UOP_CTL or VOBU_UOP_CTL. In addition, it may be used for UOP19 specifying prohibition/authorization of user actuation of pause-off or menu language selection. UOP20 specifies prohibition/authorization of the voice stream modification actuation by the user, and is contained in PGC_UOP_CTL or VOBU_UOP_CTL. UOP21 specifies prohibition/authorization of the subimage stream modification actuation by the user, and is contained in PGC_UOP_CTL or VOBU_UOP_CTL. UOP22 specifies prohibition/authorization of the angle-type modification actuation by the user, and is contained in PGC_UOP_CTL or VOBU_UOP_CTL. In addition, it may be used for UOP22 specifying prohibition/authorization of user actuation of parental level selection or parental application country selection. UOP23 which is not illustrated specifies prohibition/authorization of the karaoke voice playback mode change actuation by the user, and is contained in PGC_UOP_CTL or VOBU_UOP_CTL. UOP24 specifies prohibition/authorization of the video playback-mode modification actuation by the user, and is contained in PGC_UOP_CTL or VOBU_UOP_CTL.

[0040] A fundamental playback procedure including the actuation in the case of reading recording information in the disk of drawing 2 by the DVD player of drawing 1 is explained below, referring to drawing 6 - <A HREF="/Tokujitu/tjitemdrw.ipdl?N0000=239&N0500=1E_N/;> << <=?? 9///&N0001=36&N0552=9&N0553=000011" TARGET="tjitemdrw"> drawing 9.

[0041] Drawing 6 is flow chart drawing explaining the initial actuation in the case of reading recording information in the disk of drawing 2 by the DVD player of drawing 1 (usually before playback initiation).

[0042] first, the DVD disk 10 is set to the disk tray (not shown) of the DVD player of drawing 1 , if the closing carbon button which is not illustrated on the actuation key panel (or remote controller) 12 of drawing 1 is pushed, and a play carbon button is pushed in the condition under halt after a disk is set or, revolution actuation of the disk 10 will be carried out (step ST 10), and reading will be started from the lead-in groove area (step ST 12). Then, the volume descriptor in a disk 10 (logical-block number LBN:030000H) is read (step ST 14), and the judgment of whether this disk is a DVD disk is performed. It is whether the standard identifier Standard Identifier in a volume descriptor is "CD001", and, specifically, can judge whether the set disk is CD and whether it is DVD. If the set disk is CD (no [step ST16], step ST18 yes), it will move to CD regeneration. Processing will be ended if the set disk is not DVD or CD, either (no [step ST16], no [step ST18]).

[0043] If the set disk is DVD (step ST16 yes), a root directory record will be read (step ST 20), and directory "VIDEO_TS" in which close [of a DVD video data] is will be searched (step ST 22). If the searched directory is not "VIDEO_TS" (no [step ST24]), retrieval of other directories will be continued (steps ST26, ST22, and ST24). Processing is ended if "VIDEO_TS" is not found to the last (no [step ST26]). If directory "VIDEO_TS" is found (step ST24 yes), a VTS subdirectory file search will be performed (step ST 28), and the record of a VTS subdirectory will be read (step ST 30). Processing is ended if "VIDEO_TS.IFO" which includes the video manager information VMGI in the record is not found (no [step ST32], no [step ST34]). If "VIDEO_TS.IFO" containing VMGI is found (step ST32 yes), it will shift to the usual DVD regeneration.

[0044] Drawing 7 - drawing 9 are flow chart drawings explaining the usual regeneration in the case of reproducing the content of record from the disk of drawing 2 by the DVD player of drawing 1 .

[0045] In drawing 7 , video manager information management table VMGI_MAT is read from VMGI of "VIDEO_TS.IFO" (step ST 40). Although not illustrated, in this VMGI_MAT, starting address TXTDT_MG_SA and others of VTS_Ns which shows the number of title sets, starting address TT_SRPT_SA of a title search pointer table, and a text data manager are described. Based on these

description, several Ns of a title set are set, the address of TT_SRPT is set, and the address of TXTDT_MG is set (step ST 42).

[0046] Then, according to the information on VMGI, a video manager menu (title menu of drawing 4) is reproduced, and VMG menu processing which displays a title menu on monitor display is performed (step ST 44). TT_SRPT in VMGI is read here (step ST 46), and two or more selectable titles are displayed on the VMG menu (title menu) (when two or more titles are recorded on the disk 10). The user of the DVD player 1 of drawing 1 can choose a desired title from the displayed title menu. The title number M (M below or more 1N) which should be reproduced is determined by this selection (step ST 48). Specifically, as for TT_SRPT read at a step ST 46, one (TT_SRP#M) of pieces [them] is determined at a step ST 48 including title search pointer TT_SRP#1 of N individual - TT_SRP#N.

[0047] Determined title search pointer TT_SRP#M contains starting address information VTS_SA of the selected title (VTS#M). The starting address of target VTS#M can be known by this VTS_SA. From this starting address, the address of the video title set information VTSI arranged at the head of VTS#M is set (step ST 50). Next, video title set information management information VTSI_MAT is read out of this VTSI (step ST 52). Although not illustrated, this VTSI_MAT includes the information on the attribute about video, an audio, and each subimage, the number of streams, and others. Based on such information, the video decoder, audio decoder, and subimage decoder in the DVD player of drawing 1 are initialized (step ST 54). Then, according to the information on VTSI, a video title set menu (root menu of drawing 4) is reproduced, and VTS menu processing which displays a root menu and its lower layer various menus (an audio menu, a subimage menu, chapter menu, etc.) on monitor display is performed (step ST 56).

[0048] Next, in drawing 8 , PATOOBU title search pointer table information PTT_SRPTI in VTSI is read (step ST 58), and a playback title unit (what summarized one or more chapter groups when pointing out the group of one or more PTT_SRP in a playback title and seeing from the user) is displayed on monitor display (step ST 60). This title unit number n becomes below or more 1N (N is the number of sum total titles in an applicable disk). A user's selection of the specific title unit which should be reproduced from the VTS menu (a chapter menu / the PTT menu) reads PTT_SRPT in VTSI corresponding to the selected title unit (step ST 62). From read PTT_SRPT, the program chain number PGCN and program number PGN for playback are determined (step ST 64). In addition, although this PTT_SRPT does not illustrate, n title unit search pointer TTU_SRP is included, and each TTU_SRP contains one or more PTT search pointers.

[0049] Next, video title set PGC information table VTS_PGCIT in VTSI is read (step ST 66), and all the data of this VTS_PGCIT are saved in the work-piece memory section 7 of drawing 1 (step ST 68). In this saved VTS_PGCIT, each VTS_PGCI_SRP contains category information VTS_PGC_CAT of VTS_PGC including one or more search pointer VTS_PGCI_SRP. This VTS_PGC_CAT includes the block type information that it identifies whether an applicable PGC block is a parental block, and the information on a parental ID field. (Step ST70 Yes), when it is shown that the above-mentioned block type is a parental block, based on the information on a parental ID field, parental processing of whether to reproduce the content of the parental block is performed (step ST 72). This parental processing is used in order to make it not show a child the content for adults. When the object processed at a step ST 72 corresponds to parental actuation (parental locked), the increment of the (Step ST74 Yes) program chain number PGCN is carried out (step ST 76), and it moves to the block of the following PGC number. (Step ST74 No), when this applicable PGC block does not correspond to parental actuation (not parental locked), PGCI corresponding to the PGC number is taken out out of the data of PGCIT saved at a step ST 68 (step ST 78). (Step ST70 No), in addition, when judged with it not being a parental block in a step ST 70, processing of the above-mentioned steps ST72-ST76 is skipped.

[0050] PGCI taken out at a step ST 78 contains program chain general information PGC_GI. Although this PGC_GI does not illustrate, it contains PGC audio stream control table PGC_AST_CTLT, PGC secondary image stream control table PGC_SPST_CTLT, PGC secondary image pallet PGC_SP_PLT, etc. other than PGC_UOP_CTL shown by drawing 2 . Based on such information (PGC_AST_CTLT,

PGC_SPST_CTLT, PGC_SP_PLT, etc.), various initialization of a subimage and an audio, such as which subimage pallet is used for the color display of a subimage or as what to use the voice channel to reproduce, is performed (step ST 80). To each decoder in the DVD player 1 of drawing 1 , initial setting for playback is performed and, specifically, the address of the table used for playback is saved in the work-piece memory section 7.

[0051] Next, in drawing 9 , video title set cell address table VTS_C_ADT in VTSI is read (step ST 82), and all the data in VTS_C_ADT are saved in the work-piece memory section 7 of drawing 1 (step ST 84). The starting address and ending address of all cels are described by this saved VTS_C_ADT, and all the interleaved units in VTSTT_VOBS are further described. Specifically, one or more video title set cel piece information VTS_CPI (not shown) is described by VTS_C_ADT. Although each VTS_CPI does not illustrate, it contains ID number VTS_VOB_IDN of VOB to applicable video title set cel piece VTS_CP, cel ID number VTS_C_IDN to VTS_CP, starting address VTS_CP_SA of VTS_CP, ending-address VTS_CP_EA of VTS_CP, etc.

[0052] Next, command table PGC_CMDT in PGCI is taken out from the data saved in the work-piece memory section 7 in the step ST 68 of drawing 8 (step ST 86). One or more PURIKO mand PRE_CMD, one or more postcommand POST_CMD(s), one or more cel command C_CMD, etc. are contained in this PGC_CMDT. PURIKO mand (pretreatment command) PRE_CMD of them is performed (step ST 88), and program-number PGN for command processing and cel ID number VTS_C_IDN are saved in the work-piece memory section 7 of drawing 1 (step ST 90). Next, it is judged whether the cel corresponding to the cel ID number saved at a step ST 90 is reproduced at random. (Step ST92 Yes), when reproducing at random, the random number (random number) R is generated with a random function inside [MPU2] drawing 1 , and it goes into regeneration of the cel of the cel ID number corresponding to this random number R (step ST 96). (Step ST92 No), when not carrying out random playback, processing of steps ST94-ST96 is not performed, but processing which performs cel playback corresponding to one or more VTS_CPI in VTS_C_ADT is performed (step ST 98).

[0053] then, still time amount (0 - 254 seconds -- or unrestricted) is set up by the navigation system (step ST 100), and a still (PGC still) is performed only for the set-up time amount (step ST 102). Then, postcommand (after-treatment command) POST_CMD contained in command table PGC_CMDT in PGCI is performed (step ST 104), the PGC number PGCN is updated (step ST 106), and PGCN after updating is read. If PGCN after updating is not zero (no [step ST108]), processing from the step ST 70 of drawing 8 to the step ST 106 of drawing 9 will be rerun. If PGCN after updating is zero (step ST108 yes), since there will be no next PGC, usual regeneration of drawing 7 - drawing 9 is ended.

[0054] Drawing 10 is flow chart drawing explaining the processing in the case of reproducing the content of record of a cel from the disk of drawing 2 by the DVD player of drawing 1 .

[0055] Initiation of cel playback determines the playback starting address (logical-block number LBN) of an applicable cel from the content of PGCI saved in the work-piece memory section 7 of drawing 1 (step ST68 reference of drawing 8) (step ST 204). (step ST200 yes) Specifically, in PGCI, this C_PBIT contains one or more cel playback information C_PBI (not shown) including cel playback information table C_PBIT (not shown). every -- although C_PBI does not illustrate, it contains cel category C_CAT including the information which shows whether an applicable cel is angle iron, playback time amount C_PBTM of an applicable cel, starting address C_FVOBU_SA of the head VOBU in an applicable cel, ending-address C_FILVU_EA of the head interleave unit in an applicable cel, starting address C_LVOBU_SA of Last VOBU in an applicable cel, ending-address C_LVOBU_EA of Last VOBU in an applicable cel, etc. Among those, C_FVOBU_SA can determine the playback starting address of an applicable cel. In this way, a read-out instruction is set to the disk drive section 5 of drawing 1 based on the determined address (step ST 206).

[0056] If a read-out instruction is set, the disk drive section 5 will read VOBU from the address determined at a step ST 204. Then, the navigation pack (NV_PCK of drawing 3) arranged at the head of VOBU by which reading appearance was carried out is incorporated (step ST 208), and it is stored in the work-piece memory section 7 of drawing 1 . Based on the synchronization information included in the

DSI data in this NV_PCK (drawing 3), the internal-system timer clock STC of the DVD player 1 of drawing 1 (not shown) etc. is set up (step ST 210). The highlights information HLI is included in the PCI data (drawing 3) of this NV_PCK. Navigation pack processing including highlights processing of a menu etc. is performed using this HLI etc. (step ST 212). (Step ST214 Yes), then, when a VOBU still is performed, waiting (step ST 216) and VOBU still processing are started till playback termination of Relevance VOBU (step ST 218). This VOBU still is continued until the still time amount of this VOBU still is unrestricted, for example, a user does a playback key stroke. (Step ST214 No), when a VOBU still is not performed, steps ST216-ST218 are skipped.

[0057] (Step ST220 No), after navigation pack processing (step ST 212) or VOBU still (step ST 218) discharge, when the object for playback in the event is not the last of an applicable cel, processing of steps ST210-ST218 is repeated. (Step ST220 Yes), when the object for playback in the event is the last of an applicable cel, waiting (step ST 224) and cel still processing (still playback of the set-up time amount) are started till playback termination of Relevance VOBU (step ST 226). After cel still processing, when there is a cel command (step ST228 yes), cel command processing is made (step ST 230), and a return is carried out to other manipulation routines. When there is no cel command (no [step ST228]), the return of the cel command processing is carried out to other manipulation routines, without being made.

[0058] Drawing 11 shows the processing which reads user actuation prohibition information (a part of UOP0-UOP24 of drawing 5 or wholly) in the disk of drawing 2 by the DVD player of drawing 1 . These a part or all of UOP0-UOP24 is saved in the work-piece memory section 7 of drawing 1 .

[0059] The function to perform a sequential-operation guide is added in the equipment concerning the gestalt of 1 implementation of this invention.

[0060] The remote controller for operating by remote control is shown in drawing 12 . Various kinds of actuation keys are prepared in this remote controller 500. 501 is a power button and a power source can be turned on and off by operating this. 502 is a disk selection carbon button and can choose the disk 1 or disk 2 with which the player is loaded by operating this.

[0061] 503 is a navigation carbon button (it may be called NABIBOTAN for short), and a navigation menu will be displayed if this is operated. This navigation menu appears on the screen of a display (for example, 20 of drawing 1), as shown in drawing 13 . The image information of this navigation menu is stored in data memory 2C of drawing 1 .

[0062] As a navigation menu, the display of items, such as "V-Remote", "AngleViewer", "Zoom", "Strobe Viewer", "Preview", "DNR", "Capure", "Title", "Chapt.:", "Audio:", "Subtitle", "Angle:", and "BitRate:", appears. With the equipment concerning the gestalt of 1 implementation of this invention, if a remote controller is operated, cursor is doubled with a desired item and ENTA actuation is performed by the remote controller with this navigation menu, a lower layer menu will appear in the pan of each item.

[0063] It returns to drawing 12 and the carbon button of a remote controller 500 is explained. 504 is a setup carbon button, and if this is operated, the icon for performing various kinds of setups on a screen will appear. As an icon, there are picture activation setting, sound output setting, language setting, display setting, operational research setting, and initial setting.

[0064] As picture activation setting, there are setting out of the aspect ratio according to the aspect ratio (is it 4:3 or 16:9?) of an indicating equipment, adjustment of black level, adjustment of image quality, etc. When progressive television is connected as an indicating equipment, there are selection of a video outlet in case the image currently recorded on the DVD disk else [, such as the image quality adjustment,] is the aspect of 4:3, method selection of the output signal at that time, etc.

[0065] There is setting out of attenuation in case on-off selection of voice in case selection of the type of output of an audio, control of a dynamic range, and the disk for karaoke are played as sound output setting according to the audio equipment connected, and Audio CD are reproduced.

[0066] Moreover, as language setting, there are setting out of the language in setting out of the language displayed on a screen and a menu display, setting out of audio language, and setting out of the language of a subimage.

[0067] There are setting of whether to perform the display which shows operating state to the screen of an

indicating equipment as display setting, the color of the background and selection of a picture, and selection of whether to turn ON a screen saver.

[0068] Moreover, after selection of the resolution (the field or frame level) of the still drawing at the time of a pause, turning on and off of a parental lock function, selection of whether to make a sound which calls the command of remote control Py at the time of a carrier beam, and title playback finish as operational research setting, when reproducing [whether it stops automatically and] a video CD, there is setting out of whether to take out a menu screen etc. Moreover, as initial setting, there are language on a screen, TV format, audio selection, etc.

[0069] The remote controller 500 is equipped with the quick carbon button 505. A push on this quick carbon button 505 displays the menu image of actuation items, such as "memory", a "memory list", "a repeat", randomness, a "bit rate", a "text", "a disk selection", and "Exit (termination directions which slip out of quick processing) etc."

[0070] If "memory" is chosen during a playback halt period, a memory list will appear. In a memory list, the item of a "disk number", a "title number", and "a chapter number or a track number" appears. A user can move cursor to the location of each item, and the disk to play, a title, a chapter, etc. can be specified by pushing the number carbon button (ten key actuation) of hope here. And if the content which pushed and specified the en turbo tongue is determined and a play carbon button is pushed, a title, a chapter, etc. which were specified are reproducible. That is, the sequence to reproduce is programmable.

[0071] Selection of "a repeat" displays items, such as "an A-B repeat", "a chapter repeat", "a title repeat", "a truck repeat", "a disk repeat", and "an all repeat." If the repeat system of hope is chosen, the start point / ending point of a repeat are specified and a play carbon button is operated, selection / specified repeat of the content will be performed.

[0072] Selection of "random" displays items, such as "chapter random", "title random", "truck random", "all random", and "random-off." If the item of hope is specified here and a play carbon button is pushed, random playback based on the selected item will be performed. The bit rate which will be transmitted if a "bit rate" is chosen is displayed. Selection of a "text" displays the text currently recorded on the disk. For example, it is a manufacturer's comment etc.

[0073] 506 of a remote controller 500 is an audio carbon button. If it is operated while reproducing this, the language of a current audio output, a recording method, and a channel will be displayed. Moreover, if this carbon button is pushed while setting the point, the language selection menu of an audio output, the setting-out menu of a recording method, etc. are displayed, and a user can choose it as arbitration. However, when there is no recording method, it is set as the method currently automatically recorded at the time of playback. In addition, selection of each item of a menu can also specify the menu item of hope in this system by moving cursor, choosing and then pushing the en turbo tongue of a remote controller 500 on the remote control screen displayed on an onscreen display.

[0074] What is necessary is just to push the audio carbon button 506 further to change this, although the language of a current audio output, a recording method, and a channel will be displayed if the audio carbon button 506 is pushed during playback. Then, the class of language currently recorded on the disk changes, and it is displayed, and the simultaneous recording method, a channel, etc. are doubled and displayed. For example, a display changes from the display of "ENG PCM 2CH" like "SPA PCM2CH." An English simple form and SPA mean a Spanish simple form, as for ENG, PCM means pulse code modulation, and 2CH means ****** for a stereo.

[0075] 507 of a remote controller 500 is a subtitle carbon button. If it is operated while reproducing this, it will indicate what kind of language language, such as a title by which current selection is made, is on a screen. For example, supposing English is chosen as a current subtitle, it will be displayed on the **** "ENG" by some screens. In the case of French, "FRE" and the alphabetic character in which simple [of the case of "SPA" and Japanese] was carried out to "JN" flume **** in the case of Spanish are displayed. When a subtitle is pushed one after another, the language to choose will change each time.

[0076] 508 of a remote controller 500 is an angle-type carbon button, and if this carbon button is pushed, the angle type under current playback will be displayed like 1/5. Although there are five of this as an

angle-type stream of the image currently recorded on the disk, it means that it is the 1st stream of them. What is necessary is just to push the angle-type carbon button 508 further to change an angle type. Then, an angle-type stream can be changed one after another.

[0077] 509 of a remote controller 500 is a menu button. If this carbon button 509 is pushed, the menu image currently recorded on the disk can be used. This can enter the menu screen currently recorded on the disk as previous drawing 4 explained. 511 of a remote controller 500 is a top menu carbon button, and if this is pushed, the head image of the chapter of each title will appear as a menu. What this menu image is also beforehand recorded on the disk is used. When there are two or more titles and chapters, two or more head images appear. If cursor is doubled with the image of hope and an en turbo tongue is operated, playback of the title corresponding to the image concerned or a chapter will be started.

[0078] 510 of a remote controller 500 is a video remote control carbon button. If it pushes while reproducing this carbon button, a graphic remote control image will appear on a screen.

[0079] By this image, the title number under playback, a chapter number, a stream selection situation, the playback direction, and the graph for speed selection appear.

[0080] Drawing 14 (A) shows an example of the above-mentioned graphic remote control image.

[0081] 600 is the whole display screen and the graphic remote control image (it omits below and abbreviates to a glass-fiber-reinforced-cement screen) displayed on a part of this screen includes the 1st screen 601 in which the title number and chapter number under playback are shown, and the 2nd screen 602 used for actuation and selection. Furthermore, there are the stream selection image 611 and the speed selection image 612 in the 2nd image 602.

[0082] The above-mentioned glass-fiber-reinforced-cement image is projected in the translucent condition (or spaced condition) so that the image under playback may not serve as a blind thoroughly. The image under playback is an animation, checking the image which a user is reproducing, it is because equipment was operated and this point is also this system feature.

[0083] The audio selection image 611, the subtitle selection image 612, and the angle-type selection image 613 are contained in the further above-mentioned stream selection image 610. Moreover, the navigation selection image 621, the forward direction high-speed playback selection image 622, the hard flow high-speed playback selection image 623, the forward direction skip playback selection image 624, the hard flow skip playback selection image 625, the forward direction slow playback selection image 626, the hard flow slow playback selection image 627, the pause selection image 628, and the usual playback selection image 629 are contained in the above-mentioned speed selection image 612.

[0084] A user can operate remote control equipment 500, can move cursor, and can move cursor to the location of the actuation item of hope. And if the enter key of a remote controller 500 is pushed, a low-ranking hierarchy's menu image will appear in the pan of the selected item. Or playback corresponding to the content of actuation is realized as it is.

[0085] 512 of a remote controller 500 is a cursor control carbon button (refer to drawing 14 (B) and drawing 12). The cursor control carbon button 512 is an anchor ring, and can control the migration direction (the upper and lower sides, right and left, the direction of slant) of cursor according to the location (include angle) which pushes this carbon button 512. The en turbo tongue 513 is arranged in the center of this cursor control carbon button 512. The item of the part which cursor moved can be decided by pushing this en turbo tongue 513.

[0086] It returns and explains to drawing 12 . 514 of a remote controller 500 is a jog control carbon button, and if this is usually rotated during playback, it is controllable according to a hand of cut in the forward direction high-speed playback or the hard flow high-speed playback condition.

[0087] 515 of a remote controller 500 is a return carbon button, and if this carbon button 515 is operated, it can return a menu image to the menu image in front of the present image.

[0088] 516 of a remote controller 500 is a clear carbon button. For example, if this clear carbon button 516 is operated when having inputted a title number and a chapter number to reproduce by the menu image with the ten key, a number is cleared and it can reinput again.

[0089] 517 of a remote controller 500 is the skip carbon button 517. This skip carbon button 517 is pushed

to skip on the next chapter and next truck of the forward direction during playback. 518 is a skip carbon button. This skip carbon button 518 is pushed to skip on the chapter and truck of hard flow during playback.

[0090] 519 of a remote controller 500 and 520 are used to see an image in slow motion, and each is the forward direction slow playback carbon button and a hard flow slow playback carbon button.

[0091] 521 of a remote controller 500 is a play carbon button. Moreover, 522 is a stop button and 523 is a pause carbon button.

[0092] 524, 525, and 526 of a remote controller 500 are a zoom carbon button. If a carbon button 524 is pushed, it will become zoom mode, if a carbon button 526 is pushed, a scale factor will become large, and a scale factor will become small if a carbon button 525 is pushed. The zoom point can be returned to middle of the screen, if the clear carbon button 516 is pushed. In order to move the zoom point, the cursor control carbon button 512 can be operated and it can be made to move. If a carbon button 524 is repeated and pushed, zoom-off will be displayed, zoom mode will become off and it will usually become a playback mode.

[0093] The carbon button 527 of a remote controller 500 is a digital noise reduction (DNR) setup key, and will change extent (OFF, weakness, strength) of the digital noise reduction effectiveness by repeating and pushing this carbon button.

[0094] The carbon button 528 of a remote controller 500 is a color stream selection carbon button. In DVD, since there are progressive I/O and interleave I/O, the case where either is chosen arises according to a display or record regenerative apparatus (for example, VTR etc.). Then, a selection change can be performed by operating this carbon button 528.

[0095] The carbon button 529 of a remote controller 500 is a carbon button for changing the brightness in the display of equipment. The carbon button 530 of a remote controller 500 is in the condition displayed on alphabetic character screens, such as a title and a chapter, and it is pushed to erase this display. 531 of a remote controller 500 is a ten key.

[0096] The carbon button 533 of a remote controller 500 is a repeat button. Whenever it pushes this carbon button, a mode of operation changes to each mode of a chapter repeat, a title repeat (truck repeat), a disk repeat, an all repeat, and repeat-off. If a carbon button 532 can set up the repeat of the range of Point B from Point A and this carbon button 532 is pushed, it will serve as a mode of operation for setting up Point A and Point B.

[0097] A carbon button 534 is a memory carbon button, and if it pushes when equipment has suspended this carbon button, the list image for carrying out memory will appear on a screen. This image shows the item of the De Dis number, a title number, and a chapter number. Then, a user can move cursor to the tooth-space location corresponding to each item, and can do the figure input of a disk number, a title number, and the chapter number using a ten key. Next, a push on a play carbon button reproduces the title and chapter of a number which were entered in this memory list. For example, what is necessary is to display a memory list, to move cursor, to double with the display position of the number concerned and just to push a clear carbon button to carry out chapter number cancellation of the specification.

[0098] The carbon button 535 of a remote controller 500 is a random playback carbon button. Random playback of the truck which carries out random playback of the chapter whenever it pushes this carbon button and which carries out title random playback is carried out, and which random off item that carries out all random playback is displayed repeatedly. When the item of hope is displayed and a user pushes a play carbon button, random playback will be carried out from the content of the item concerned.

[0099] 540 of a remote controller 500 is a lid, and as shown in drawing 12 (B), the television actuation key section 541 is formed in the side front of this lid 540.

[0100] Drawing 15 is a flow chart which shows the actuation in the case of displaying the graphic remote control image which constitutes the description of this invention, and operating a regenerative apparatus.

[0101] A push on the video control carbon button 510 (refer to drawing 12) displays a graphic remote control image which was explained by drawing 14 . When processing about this graphic remote control image and control of the mode of operation of a regenerative apparatus are performed, remote control

actuation information operates in relation to graphic remote control image-processing section 2H shown in drawing 1, management information processing section 2I, multiprocessing section 2J, translucence processing section 2K, and a pan with user interface creation section 2A, menu judging section 2B, and OSD memory 2C.

[0102] When a video control carbon button is pushed (steps C1 and C2), reading appearance of the information on a graphic remote control image is carried out from OSD memory 2C (step C3), and it is once stored in graphic remote control image-processing section 2H. And multiplex [of the title number under playback stored in management information processing section 2I, the chapter number, etc.] is carried out (step C4). Moreover, multiplex [of the simple notation information on the language of an audio stream by which current selection is made, the simple notation information on the language of a subtitle, the number of an angle type, etc.] is carried out. In the simple notation of the language of "EN" (English is meant) and a subtitle, in the example of drawing 14 , the number of "JN" (Japanese is meant) and an angle type is [the simple notation of audio language] "one fifth" (the 1st angle type is meant among five angle types).

[0103] Next, the information on a graphic remote control image is piled up to the information on the Maine image. In this case, processing for projecting in the translucent condition (or spaced condition) is performed so that the image under playback may not serve as a blind thoroughly (step C5). This is attained by control of the intensity level of the graphic remote control image to the Maine image in translucence processing section 2K. In addition, it may consider as the processing for projecting in the translucent condition (or spaced condition), in addition infanticide processing may be performed for the data of a graphic remote control image in the direction of a time-axis.

[0104] The information on the graphic remote control image processed as mentioned above lays on top of the information on the Maine image, and is displayed on the screen of a display (step C6). Next, when it is judged and operated whether the cursor control carbon button 512 as shown in drawing 14 (B) was operated, processing which moves cursor according to actuation is performed (steps C7 and C8). The technique usually performed can attain cursor advance processing.

[0105] Next, if it turns out that it judged and (step C9) pushed whether the en turbo tongue 513 was pushed, the command corresponding to the manual operation button specified with cursor will be determined (step C10), and the command concerned will be sent to the mode-of-operation change section (step C11). (although the mode-of-operation change section is not illustrating, prepared in MPU2 of drawing 1) As a mode of operation, as drawing 14 explained, for example, the navigation selection image 621, the forward direction high-speed playback selection image 622, the hard flow high-speed playback selection image 623, the forward direction skip playback selection image 624, the hard flow skip playback selection image 625, the forward direction slow playback selection image 626, the hard flow slow playback selection image 627, the pause selection image 628, and the mode of operation corresponding to the playback selection image 629 are usually.

[0106] Next, after changing a mode of operation, the judgment of whether whether fixed time amount progress having been carried out and an elimination carbon button were operated is performed (step C12). Although an elimination carbon button is not shown in drawing 12 , an equivalent function can be obtained by continuing pushing a video remote control carbon button a double click or beyond predetermined time, for example.

[0107] When a graphic remote control image disappears from a screen, the information on the graphic remote control image concerned is accumulated in memory (for example, area secured to the graphic remote control image-processing section), and a display output is turned off (step C13).

[0108] Next, when a video control carbon button is pushed while having played the same disk as the above, reading appearance of the information on the graphic remote control image stored in the memory concerned is carried out first.

[0109] Especially drawing 16 shows actuation when the item of the audio selection image 611 in the stream selection image 610, the subtitle selection image 612, and the angle-type selection image 613 is specified in detail in the content of step C10.

[0110] Moreover, drawing 17 has illustrated audio attribute information and subpicture attribute information among the management information used with the equipment concerning the gestalt of 1 implementation of this invention.
[0111] When the en turbo tongue 513 is pushed, as for the image specified by cursor, the judgment of the audio selection image 611, the subtitle selection image 612, and the angle-type selection image 613 is performed (steps D1, D2, and D3).
[0112] Supposing the audio selection image 611 was now specified by cursor, reading appearance of the management information will be carried out from the part which has memorized the management information of the disk under playback, and the attribute information about an audio stream will be referred to from it (step D4). It is recorded on VTSI as a video title set audio stream attribute table (VTS_AST_ATRT) so that the attribute information about an audio stream may be illustrated to drawing 17 , and the information which shows what kind of language the language of each stream of an audio is in this attribute table is described.
[0113] So, with the equipment concerning the gestalt of 1 implementation of this invention, the simple notation alphabetic character of language is displayed on the numerical order of a stream from the language by which the default is carried out, referring to this attribute table (steps D5 and D7). A display position is the part shown by drawing 14 . When it passes fixed time, without operating an en turbo tongue, it is a time of pushing the predetermined location of a cursor carbon button at the change event. Since it is that the audio stream of the language concerned is chosen when the simple graphic character of the language of hope of a user appears, an enter key is pushed (step D6).
[0114] Moreover, now, the subtitle stream selection image 612 is specified by cursor, and presupposes that the enter key was pushed. Then, management information is read from the part which has memorized the management information of the disk under playback, and the attribute information about a subtitle stream is referred to (step D8). The attribute information about a subtitle stream is also recorded on VTSI as a video title set subpicture stream attribute table (VTS_SPST_ATRT), and the information which shows what kind of language the language of each stream of a subtitle is in this attribute table is described.
[0115] So, with the equipment concerning the gestalt of 1 implementation of this invention, the simple notation alphabetic character of language is displayed on the numerical order (steps D9 and D11) of a stream from the language by which the default is carried out, referring to this attribute table. A display position is the part shown by drawing 14 . When it passes fixed time, without operating an en turbo tongue, it is a time of pushing the predetermined location of a cursor carbon button at the change event. Since it is that the subtitle stream of the language concerned is chosen when the simple graphic character of the language of hope of a user appears, an enter key is pushed (step D10).
[0116] Moreover, now, the angle-type selection image 613 is specified by cursor, and presupposes that the enter key was pushed. Then, reading appearance of the management information is carried out from the part which has memorized the management information of the disk under playback, and the attribute information about an angle type is referred to from it. The attribute information about an angle type is described by the angle-type information in PCI of drawing 3 , or DSI. For example, in the case of DVD, the stream of nine angle types can be divided and recorded. The unit of division is called an interleave unit, and this interleave unit is interleaved and it is recorded. Angle-type information is described by the next address of the next INTARIBU unit of self of each stream, and the size of a unit. Therefore, it can recognize how many the stream of an angle type is recorded by referring to this angle-type information.
[0117] So, with the equipment concerning the gestalt of 1 implementation of this invention, it can grasp whether the angle type chosen now is an angle type of the stream of what [the] position with reference to angle-type information. Based on this grasp, as shown in drawing 14 , a display like angle types 1/5 can be obtained (step D13). If the angle-type selection image 613 is specified by cursor and an enter key is pushed, a change of the display which shows the angle type which is making current selection will be attained. If the position of for example, a cursor control carbon button is pushed here, the display which shows the following angle type will be obtained. For example, it is obtained like two fifths. Thus, an angle type can be changed one after another (step D15). If an angle-type display changes, it will change to the

angle type which also specified the image stream currently naturally reproduced. Then, a user will push an enter key, when the stream of the angle type of hope is obtained (step D14).
[0118] The content of description of the video title set audio stream attribute table (VTS_AST_ATRT) described by VTSI described previously and the content of description of a video title set subpicture stream attribute table (VTS_SPST_ATRT) are shown in drawing 18 in more detail.
[0119] Drawing 19 is a flow chart explaining the content of processing of the background-image incorporation system in the equipment concerning the gestalt of 1 implementation of this invention.
[0120] Moreover, drawing 20 is drawing showing the example of image display acquired by processing of drawing 19 .
[0121] The remote controller 500 shown in drawing 12 is equipped with the navigation carbon button (NABIBOTAN) 503. The image information of a navigation menu is taken out from data memory 2C of drawing 1 as this navigation carbon button 503 is pushed, and a navigation menu which is illustrated on the screen of TV (indicating equipment)20 of drawing 1 at drawing 13 is displayed (step ST 502). (step ST500 yes)
[0122] This navigation menu includes items, such as "V-Remote", "Angle Viewer", "Zoom", "Strobe Viewer", "Preview", "DNR", and "Capure", as shown in drawing 13 .
[0123] "Capure" is chosen from this navigation menu by actuation (cursor key actuation) of the cursor control carbon button 512 of a remote controller 500, and a screen display of the OSD menu which is illustrated that the en turbo tongue 513 of a remote controller 500 is pushed to drawing 20 (A) is carried out (step ST 506). (step ST504 yes)
[0124] Translucent processing of this OSD menu is suitably carried out by translucence processing section 2K of drawing 1 , and it is superimposed and displayed on the playback image of the DVD disk 10. (If this OSD menu size is small compared with the size of the whole playback image and there is no trouble in the content check of a playback image, it is not necessary to carry out translucent processing of this ODS menu)
Next, a user pushes the pause carbon button 523 of a remote controller 500 on a favorite screen, looking at the playback image from a disk 10 (step ST508 yes). Then, the screen for which a user asks is displayed as a still picture with the above-mentioned OSD menu so that it may illustrate to drawing 20 (B) (step ST 510). You may make it display the animation repeated by short-time time amount (for example, 1 second - about 10 seconds) instead of a still picture pause from the flash when the pause carbon button 523 was pushed in that case.
[0125] After the still picture (or animation which carries out a short-time repeat) for which a user asks was displayed, If "preservation "Storing"" is chosen from the ODS menu on a screen by cursor key actuation of a remote controller 500 and the en turbo tongue 513 is pushed The still picture (or animation which carries out a short-time repeat) currently then displayed on the screen is incorporated by the work-piece memory section 7 of drawing 1 as "a background image / background image" or a "wallpaper image" (step ST 512).
[0126] the item of "Storing" in the OSD menu of drawing 20 (A) in under preservation of this still picture (or short-time animation) -- blinking -- the present preservation -- a user is notified of a working thing (during this flash period, it can constitute so that other menu manipulation cannot be performed).
[0127] If a user chooses "Navi" from the OSD menu of drawing 20 (A) and pushes the en turbo tongue 513 after the above "preservation "Storing"" is completed (step ST516 yes), it will return to the navigation menu of drawing 13 .
[0128] (Step ST518 Yes), on the other hand, when a user chooses "Exit" from the OSD menu and pushes en turbo tongue 513, it ends and usually moves from navigation menu processing to the menu screen of playback or a DVD disk, or the standby condition before playback initiation (or idle state of a DVD player).
[0129] When the equipment (DVD player) of drawing 1 is in a standby condition or a idle state and incorporation of the still picture (or short-time animation) by the above-mentioned "Capure" processing is not made, the specific image (an animation which is used for the still picture or screen saver containing a

player manufacturer's LOGO, or blue back) which the DVD player prepared beforehand is displayed on the screen of TV20 of drawing 1 .

[0130] On the other hand, when the equipment (DVD player) of drawing 1 is in the standby condition or idle state of playback initiation after incorporation of a still picture (or short-time animation) is made by the above-mentioned "Capure" processing, the incorporated still picture (or short-time animation) is displayed as a background image on the screen of TV20 of drawing 1 (in the case of an animation, it is repeat playback of a short-time loop formation).

[0131] In addition, through the external memory slot which is not illustrated, when capacity is insufficient for the work-piece memory section 7 of the equipment of drawing 1 memorizing an animation, it can constitute so that duplication of external memory (RAM or EEPROM) may be possible. Thus, when having come to be able to perform duplication of memory, the above-mentioned "Capure" processing can be incorporated for the animation of die length according to the resolution (the number of configuration pixels per frame) of memory space and an animation etc. to this add in memory.

[0132] A screen display of various ODS information can be carried out by making into a background the "still picture" or the "animation" incorporated as mentioned above. Whether it uses against the background of the incorporated "still picture" or the "animation" can determine a user as follows.

[0133] That is, if the setup carbon button 504 of the remote controller 500 of drawing 12 is turned on, the icon for performing various kinds of setups on a screen will appear. The icon for display setting is in one of the icons of these.

[0134] There is selection of the background image of the display screen as the one section of display setting started by choosing this icon. There are the blue back, a capture, a jacket, etc. in this background image. If a "capture" is chosen from this inside, the still picture (or animation of a short-time loop formation) saved at the step ST 514 of drawing 19 will be chosen as a background image. Here, when the jacket picture is recorded on the disk 10 with which the equipment of drawing 1 was loaded, this jacket picture can also be used as a background image.

[0135]

[Effect of the Invention] By the above-mentioned configuration, when it is in the standby condition or idle state of playback initiation, a user loses that the same display screen is made to always be seen, and can take out the background image of the still picture with which it was full of each user's originality, or an animation.

[Translation done.]

* NOTICES *

Japan Patent Office is not responsible for any
damages caused by the use of this translation.

1.This document has been translated by computer. So the translation may not reflect the original precisely.

2.**** shows the word which can not be translated.
3.In the drawings, any words are not translated.

TECHNICAL FIELD

[Field of the Invention] This invention relates to the technique of a graphic user interface (GUI), and relates to the background-image incorporation system which can incorporate freely the part in the playback image from a disk (a still picture or animation of a short-time repeat) as a background image through GUI actuation especially.

[Translation done.]

* NOTICES *

Japan Patent Office is not responsible for any damages caused by the use of this translation.

1.This document has been translated by computer. So the translation may not reflect the original precisely.

2.**** shows the word which can not be translated.
3.In the drawings, any words are not translated.

PRIOR ART

[Description of the Prior Art] In recent years, the DVD regeneration system corresponding to the animation which plays the optical disk which recorded digital data, such as an image and voice, is developed, and general spread is progressing accelarative in order to reproduce film software, a music title (karaoke ****), etc. the subimage data with which MPEG 2 was supported to the animation compression method, it supported AC3 audio, the MPEG audio, Linear PCM, etc. to voice according to the MPEG 2 system layer, and the specification of this DVD carried out run length compression of the bit map data as an object for titles further, and rapid-traverse/-- control data (navigation pack) is already added to special playback, such as return, and it is constituted. Moreover, by this DVD specification, ISO9660 and a UDF bridge (micro UDF) are supported so that data can be read by computer. Furthermore, functions, such as a multi-angle-type function (function which reproduces only one for the angle type which wants to record [angle type] the video data of various angle types which carry out synchronization by time sharing, and to see it), and a menu facility (the spreadsheet program for menus: function of the menu display which added the navigation command and combined the video data (the main image) and the data for titles (subimage) of Maine), are incorporated, and the interactive way of enjoying oneself which is not until now can do by this DVD specification.
[0003] Here, there is a color substitute function (highlighting capability) of a carbon button which shows that the function which displays the carbon button chosen by a user's selection, and its carbon button were chosen in a menu facility. About a menu, the video manager menu domain (VMGM_DOM) has realized the title menu. And the VTS menu domain (VTSM_DOM) has realized a root menu, the audio menu, the subimage menu, the angle-type menu, the par TOOBU title (PTT) menu (or chapter menu), etc. Although a title maker can make these menus freely, when an audio menu, a subimage menu, an angle-type menu, and the PTT menu exist, he has to have a link function (call function) to these. The root menu call carbon button and the title menu call carbon button are equipped, it appears in TV monitor and the DVD player is made to demarcate a menu screen generally, as a user interface which calls the above-mentioned menu, when a user calls each menu.

[Translation done.]

* NOTICES *

Japan Patent Office is not responsible for any damages caused by the use of this translation.

1.This document has been translated by computer. So the translation may not reflect the original precisely.

2.**** shows the word which can not be translated.
3.In the drawings, any words are not translated.

EFFECT OF THE INVENTION

[Effect of the Invention] By the above-mentioned configuration, when it is in the standby condition or idle state of playback initiation, a user loses that the same display screen is made to always be seen, and can take out the background image of the still picture with which it was full of each user's originality, or an animation.

[Translation done.]

* NOTICES *

Japan Patent Office is not responsible for any
damages caused by the use of this translation.

1.This document has been translated by computer. So the translation may not reflect the original precisely.

2.**** shows the word which can not be translated.
3.In the drawings, any words are not translated.

TECHNICAL PROBLEM

[Problem(s) to be Solved by the Invention] By the way, before a DVD player starts playback actuation, there are many to which a background image (still picture which usually contained the LOGO which shows the mere blue back or its player manufacturer) with the original player itself is outputted, or the player itself outputs an original screen saver image (animation containing easy animation).
[0005] However, as long as the above-mentioned background image is the thing of a proper and continues using the player for the player, the same image will always be displayed to a user. However, if people repeat the same thing and continue being shown, they get bored, and another background image comes to become wanting.
[0006] This invention was made in view of the above-mentioned situation, and that object is offering the background-image incorporation system which enables it to use freely the image (a still picture or animation of a short-time repeat) which a user wishes to have as a background image.

[Translation done.]

* NOTICES *

Japan Patent Office is not responsible for any
damages caused by the use of this translation.

1.This document has been translated by computer. So the translation may not reflect the original precisely.

2.**** shows the word which can not be translated.
3.In the drawings, any words are not translated.

MEANS

[Means for Solving the Problem] In order to attain the above-mentioned object, the background-image incorporation system concerning this invention is applied to the equipment (DVD player of drawing 1) which reproduces the recording information (VTSTT_VOBS) which includes an image from an information media (10). Here, a predetermined navigation menu (drawing 13) is displayed by actuation of a user (ST500-ST502 of drawing 19), a predetermined capture menu is displayed by actuation of a user from said navigation menu (ST504-ST506), and some of still pictures or animations by which a short-time repeat is carried out of said image reproduced from said information media are incorporated as a background image (ST508-ST514). In such a system, while not reproducing said recording information from said information media (the standby condition or idle state before playback initiation), said incorporated background image is constituted so that it can use as a background image of said equipment.
[0008]
[Embodiment of the Invention] Hereafter, with reference to a drawing, the background-image incorporation system concerning the gestalt of 1 implementation of this invention is explained.
[0009] Drawing 1 is a block diagram explaining the configuration of the DVD player into which the background-image incorporation system concerning the gestalt of 1 implementation of this invention was built. This DVD player (optical disk regenerative apparatus) 1 As shown in drawing 1 The MPU section 2, the MPEG decoder section 3, the D/A converter 4 of audio data, the disk drive section 5 that performs information reading from the DVD disk 10, the system processor section 6, the work-piece memory section 7, the subimage decoder (SP decoder) section 8, the audio decoder section 9, the video memory section 11, (Video decoder section) It consists of an actuation key panel (and/or, remote controller) 12 which is the input device of user actuation, the video processor section 13, and internal bus 14 grade. The TV monitor (or video projector which is not illustrated) 20 is connected to the exterior of this player 1 through video I/F which an external speaker 17 is connected through the audio amplifier (or AV amplifier) which is not illustrated, and is not illustrated.
[0010] In MPU2 of drawing 1 , user interface creation section 2A, menu judging section 2B, and OSD processing section 2L and capture (image incorporation) processing section 2M grade are incorporated as a firmware, and data memory (data memory of application of OSD and others) 2C is prepared further. In MPU2, graphic remote control image storage section 2H and management information processing section 2I, multiprocessing section 2J, and translucent processing (or watermark processing) section 2K grade are incorporated as a firmware further again.
[0011] Although not illustrated, in MPU2, the program memory in which other firmwares (program which takes charge of processing of drawing 6 - drawing 11) were written is also prepared. Moreover, in the system processor section 6, data carving section 6A and memory I/F section 6B are prepared.
[0012] The fundamental flow of the data in the configuration of drawing 1 is as follows. That is, the MPU section 2 sends the target address and a lead instruction to the disk drive section 5. then, the disk drive section 5 sends the packed data which carried out reading appearance of the target logical sector data to the system processor section 6 through the data input section which carries out reading appearance, and which is not illustrated from the disk 10 according to the address and the instruction which were sent.

Within the system processor section 6, data carving section 6A carves the sent packed data into packet data, and according to the content (object) of data, video packet data (data by which MPEG encoding was carried out) are transmitted to the video decoder section 3, transmit audio packet data to the audio decoder section 9, and transmit subimage packet data to SP decoder section 8.
[0013] Moreover, in order that the MPU section 2 may process suitably, the header unit of the packs (subimagery pack SP_ audio pack A_PCK, video pack V_PCK, PCK, etc.) of navigation pack NV_PCK and others is transmitted to the work-piece memory section 7 through memory I/F section 6B, and is saved there. Each packet data sent to each decoder section regenerates synchronizing with the value of the playback time stump in packet data (Presentation Time Stamp:PTS). Thereby, an animation with for example, an English voice + Japanese title (film) can be made to come out of and draw on the screen of the TV monitor 20.
[0014] Inside MPU2, the on-screen display (OSD) which offers a user interface for a user to operate it visually and check using the in-house data of data memory 2C is generated. This generation is performed by the firmware user interface generation section 2A, and the generated OSD data are saved in the video memory section 11. Moreover, menu judging section 2B which judges the class (a root menu, title menu, etc.) of menu picked out from the disk 10 is prepared in the interior of MPU2 in the form of a firmware. In addition, about the DS of the information recorded on the disk 10 of one sheet, it mentions later.
[0015] Drawing 2 is drawing explaining the hierarchy DS of the DVD disk used by the DVD menu display system concerning the gestalt of 1 implementation of this invention. Lead-in groove area is established in an inner circumference side, lead-out area is established in a periphery side, and a volume space 28 is formed in the DVD disk 10 between them so that it may illustrate. This volume space 28 contains volume / file structure information area 70, the DVD video area 71, and other record area 73 grades. Available information or other information (for example, computer information) which are not related to a video title set are recordable on the other record area 73 by the video title set VTS. This record area 73 may be deleted, if it is not indispensable and is not used. Volume / file structure area 70 is equivalent to the management domain set to ISO9660 and a UDF bridge. The video manager's VMG content is stored in the memory of a DVD player based on description of this area 70.
[0016] The above-mentioned area 70-73 is classified on the boundary of a logical sector. Here, 1 logical sector is defined as 2048 bytes, and 1 logical block is also defined as 2048 bytes. Therefore, 1 logical sector is defined as 1 logical block, a pair, etc. The DVD video area 71 includes management information called the video manager VMG and the contents information of one or more (a maximum of 99 pieces) video title set VTS#N.
[0017] File 74A of management information VMG consists of video manager information VMGI, video object set VMGM_VOBS for video manager menus (option), and backup VMGI_BUP of VMGI. VMGI Video manager information management table VMGI_MAT (not shown), Title search pointer table TT_SRPT, video manager menu PGCI unit table VMGM_PGCI_UT (not shown), Parental management information table PTL_MAIT (not shown), video title set attribute table VTS_ATRT (not shown), Text data manager TXTDT_MG (not shown), video manager MENYUSERU address table VMGM_C_ADT (not shown), And video MANEJAMENYUBIDEO object unit address map VMGM_VOBU_ADMAP (not shown) is included.
[0018] TT_SRPT contained in VMGI contains title search pointer table information TT_SRPTI (not shown) and one or more title search pointer TT_SRP. Each TT_SRP is recall type TT_PB_TY (in one sequential title of PGC) of an applicable title. One random PGC title, multi-PGC title, etc., Number AGL_Ns of angle types (not shown), par TOOBU title number (number of chapters) PTT_Ns (not shown), Parental ID-field TT_PTL_ID_FLD (not shown) of an applicable title, the VTS number VTSN (not shown), VTS title number VTS_TTN (not shown), and starting address VTS_SA (not shown) of VTS are included. The user actuation flag bit UOP0 which determines whether user actuation of a time search / time play is permitted in above-mentioned TT_PB_TY, and the user actuation flag bit UOP1 which decides whether to permit user actuation of a chapter search (PTT search) / chapter playback (PTT playback) can be described now.

[0019] On the other hand, file 74B of each video title set (at drawing 2 , it illustrates by VTS#N) consists of the video title set information VTSI which is the management information of the title, video object set VTSM_VOBS for video title set menus (option), video object set VTSTT_VOBS for video title set titles (video contents), and backup VTSI_BUP of VTSI. Any video object in each VTS has the same structure except for the difference in the application. The information that it is various for reproducing these data with the video data compressed by MPEG specification, the audio (or it being incompressible) data compressed by predetermined specification, and the subimage data in which run length compression was carried out by the predetermined regulation is stored in each video title set VTS. In addition, the number of each file 74B which constitutes VTS is set to a maximum of 12 pieces. The above-mentioned files 74A and 74B are classified on the boundary of a logical sector.
[0020] Each management information VTSI of VTS Video title set information management table VTSI_MAT (not shown), Video title set PERT OBUTAITORUSACHI pointer table VTS_PTT_SRPT (not shown), Video title set program chain information table VTS_PGCIT, Video title set menu PGCI unit table VTSM_PGCI_UT (not shown), Video title set time map table VTS_TMAPT (not shown), Video title set menu cell address table VTSM_C_ADT (not shown), Video title set menu video object unit address map VTSM_VOBU_ADMAP (not shown), Video title set cell address table VTS_C_ADT (not shown) and video title set video object unit ADORESUMAPPU VTS_VOBU_ADMAP (not shown) are included.
[0021] In above-mentioned VTSM_PGCI_UT, each VTSM_PGCI_SRP contains category VTSM_PGC_CAT of the program chain for video title set menus including search pointer VTSM_PGCI_SRP of one or more program chain information for video manager menus. In this VTSM_PGC_CAT, the information on Menu ID that various menus are identified is stored.
[0022] Above-mentioned VTS_PGCIT contains video title set information table information VTS_PGCITI (not shown), one or more VTS_PGCI search pointer VTS_PGCI_SRP (not shown), and one or more video title set program chain information VTS_PGCI. Each VTS_PGCI (it only considers as the program chain information PGCI below) contains program chain general information PGC_GI, program chain command table PGC_CMDT (not shown), program chain programmed map PGC_PGMAP (not shown), cel playback information table C_PBIT (not shown), and cel positional information table C_POSIT (not shown).
[0023] Above-mentioned PGC_GI Contents PGC_CNT of PGC (not shown), PGC playback time amount PGC_PB_TM (not shown), PGC user actuation control PGC_UOP_CTL, PGC audio stream control table PGC_AST_CTLT (not shown), PGC secondary image stream control table PGC_SPST_CTLT (not shown), PGC navigation control PGC_NV_CTL (not shown), PGC secondary image pallet PGC_SP_PLT (not shown), Starting address PGC_CMDT_SA of PGC_CMDT (not shown), Starting address PGC_PGMAP_SA (not shown) of PGC_PGMAP, starting address C_PBIT_SA (not shown) of C_PBIT, and starting address C_POSIT_SA (not shown) of C_POSIT are included. The user actuation flag bits UOP0-UOP3 which determine the propriety of user actuation when PGC is reproduced in above-mentioned PGC_UOP_CTL, and UOP5-UOP24 can be described now.
[0024] On the other hand, the content (video contents) of each VTSTT_VOBS of VTS is specified by the video object (VOB_IDN#1, VOB_IDN#1, --, VOB_IDN#i) indicating one or more cels (C_IDN#1-#5, C_IDN#1-#2, --, C_IDN#1-#i), and the playback sequence of the cel shown by these VOB_IDN# is defined by PGC#1, PGC#2, --, PGC#k.
[0025] Drawing 3 is drawing explaining the hierarchy DS of the navigation pack recorded on the DVD disk of drawing 2 . The information on one or more program chains PGC is recorded by VTSTT_VOBS which is the set of the information which made the cel the unit. That is, one VTS consists of one or more PGC(s), one PGC consists of one or more programs, one program consists of one or more cels, and one cel consists of two or more video object units VOBU. The data of each cel are carved and recorded on two or more VOBU(s). Each VOBU has navigation pack NV_PCK in a head, and is constituted by the data packs (audio pack A_PCK, video pack V_PCK, subimagery pack SP_PCK, etc.) of still more various classes. Each pack consists of a pack header and one or more packets. Here, a pack is a smallest unit in the case of performing data transfer processing. On the other hand, the smallest unit which performs

processing on logic is a cel, processings on logic (playback etc.) are performed in this unit, playback sequence can be changed by it or branching etc. can be performed.
[0026] Each navigation pack NV_PCK consists of a pack header, a system header, the packet header of a PCI packet, the substream ID of a PCI packet and playback control information PCI data, a packet header of a DSI packet, and the substream ID of a DSI packet and data retrieval information DSI data. DSI data include DSI general information, seamless playback information, seamless angle-type information, VOBU retrieval information, synchronization information, etc. On the other hand, PCI data include PCI general information, non seamless angle-type information, the highlights information HLI, recording information, etc. PCI general information contains NV_PCK_LBN (not shown) which described the address of a navigation pack by the relative logical-block number, category VOBU_CAT (not shown) of Relevance VOBU, user actuation control VOBU_UOP_CTL of Relevance VOBU, playback start time VOBU_S_PTM (not shown) of Relevance VOBU, playback end time VOBU_E_PTM (not shown) of Relevance VOBU, end time VOBU_SE_E_PTM (not shown) of the sequence end contained in Relevance VOBU, cel elapsed time C_ELTM, etc.
[0027] The user actuation flag bits UOP3-UOP16 which determine the propriety of user actuation when Relevance VOBU is reproduced in above-mentioned VOBU_UOP_CTL, and UOP18-UOP24 can be described now. If it puts in another way, according to the content of the UOP bit of VOBU_UOP_CTL in NV_PCK, the class of usable key is specified during VOBU playback.
[0028] The highlights information HLI in PCI data consists of highlights general information, a carbon button color information table, and a carbon button information table. In the carbon button information table, each carbon button information contains carbon button positional information, contiguity carbon button positional information, and a carbon button command including one or more carbon button information (not shown). Carbon button positional information includes the color number information on a carbon button, the positional information (X-Y coordinate information) of a carbon button, the auto action mode information that shows selection/starting (action) condition of a carbon button.
[0029] For example, also when carrying out button grabbing from a menu [having reduced when a menu screen is reduced and two or more menus are indicated by simultaneous on 1 screen], it thinks. In this case, since a actual carbon button location (mark operated in case a user chooses a menu item) shifts to the case where it does not reduce, it is necessary to also correct the location data of a carbon button so that a cutback menu may be suited. Correction of this location data can be made based on the display position (for example, X-Y coordinate of the upper left corner of cutback menu display area) of the cutback menu on a screen, reduction percentage (one half, 1/4, etc.), and the carbon button positional information of drawing 3 .
[0030] In addition, in the DVD video system, in order to raise interactive nature, the spreadsheet program called navigation command is prepared. the carbon button command of drawing 3 -- a kind of a navigation command -- it is -- a carbon button -- starting (action) -- a corresponding navigation command is executed. This navigation command can be executed after playback of VOBU, and during navigation pack NV_PCK processing after playback of a cel before and after playback of a program chain, respectively.
[0031] Drawing 4 is drawing explaining the layered structure of the menu used by the class of menu information recorded on the DVD disk of drawing 2 , and the DVD player 1 of drawing 1 . This drawing is also a conceptual diagram explaining a response with a system menu and a user actuation function.
[0032] In a DVD player, the title menu and the root menu (main menu) are indispensable, a title menu is treated with a video manager menu (VMGM), and a root menu is treated with a video title set menu (VTSM).
[0033] As shown in drawing 3 , the video title set menu has the hierarchy composition constituted with a root menu and a menu with the various low order hierarchy. Here, the category (VTSM_PGC_CAT) of the program chain for video title set menus is constituted as follows. Namely, although not illustrated, 8 bits of low order of VTSM_PGC_CAT are assigned to the lower bit of a parental identification field. The following 8 bits are assigned to the high order bit of a parental identification field. Set that the following 4 bits are the reservation field, and a block type is specified by the following 2 bits. A block mode is

specified by the following 2 bits, and the following 4 bits describe a menu identifier (menu ID), and he sets that the following triplet is the reservation field, and is trying to specify an entry type by 1 bit (the 32nd bit) of the last.

[0034] First, it counts from 4 bytes (32 bits) of high order bit, if the first entry type is 1b (binary 1), it is shown that an applicable program chain (PGC) is Entry PGC, and if it is 0b, it is shown that applicable program chains are program chains other than Entry PGC.

[0035] The content of the subsequent 4-bit menu identifier (menu ID) is determined as follows. If the above-mentioned entry type is 0b, 0000b enters Menu ID, and when the above-mentioned entry type is 1b, the following binary codes enter Menu ID. That is, if it is a root menu, 0011b enters, if it is a subimage menu, 0100b enters, if it is an audio menu, 0101b enters, if it is an angle-type menu, 0110b enters, and if it is a par TOOBU title menu (chapter etc.), 0111b enters. The 4-bit binary code of menu identifiers other than these (menu ID) is reserved by other applications.

[0036] If the 2-bit block mode following the above-mentioned menu identifier (menu ID) is 00b, it is shown that it is not a program chain within an applicable block, if it is 01b, it is shown that it is the program chain of the beginning within an applicable block, if it is 10b, it is shown that it is a program chain under applicable block, and if it is 11b, it is shown that it is the program chain of the last within an applicable block. If the continuing 2-bit block type is 00b, it is shown that it is not a part of applicable block, and if it is 01b, it is shown that it is a parental block (block with which playback is allowed only under specific conditions). 8+8 bits of after that are a field where the information (flag bit train) for judging the playback conditions of a parental block is indicated.

[0037] Drawing 5 is drawing explaining a part of user actuation control information recorded on the DVD disk of drawing 2 . this drawing -- the user actuation control (UOP0, UOP1) by title playback type TT_PB_TY of drawing 2 , the user actuation control (UOP0-UOP24) by user actuation control PGC_UOP_CTL of drawing 2 , and the user actuation control (UOP0-UOP24) by user actuation control VOBU_UOP_CTL of drawing 3 -- the relation between each control flag (bit of UOP0-UOP24) and the user ability corresponding to them is shown selectively. Among 24 sorts of UOP(s), UOP0 specifies prohibition/authorization of the time amount playback and time amount retrieval by the user, and is contained in TT_PB_TY or PGC_UOP_CTL. Here, when a UOP bit was "0", user actuation was permitted (a graphic display O), and when a UOP bit is "1", user actuation shall be forbidden (a graphic display x).

[0038] In instantiation of drawing 5 , UOP1 specifies prohibition/authorization of the par TOOBU title playback by the user, and par TOOBU title retrieval, and is contained in TT_PB_TY or PGC_UOP_CTL. UOP2 specifies prohibition/authorization of the title playback by the user, and is contained in PGC_UOP_CTL. UOP3 specifies prohibition/authorization of a playback halt by the user, and is contained in PGC_UOP_CTL. UOP4 which is not illustrated specifies prohibition/authorization of the various GoUp actuation (actuation to which those numeric values etc. are made to increase when the numeric value in a title domain, the numeric value in menu space, or the numeric value of a program chain number is FFFFh) by the user, and is contained in VOBU_UOP_CTL. UOP5 specifies prohibition/authorization of the time amount retrieval or par TOOBU title retrieval by the user, and is contained in PGC_UOP_CTL or VOBU_UOP_CTL. UOP6 which is not illustrated specifies prohibition/authorization of program retrieval or head program retrieval, before being based on a user (precedence), and it is contained in PGC_UOP_CTL or VOBU_UOP_CTL. UOP7 which is not illustrated specifies prohibition/authorization of the program [degree (consecutiveness)] retrieval by the user, and is contained in PGC_UOP_CTL or VOBU_UOP_CTL. UOP8 specifies prohibition/authorization of the front scan (rapid traverse) by the user, and is contained in PGC_UOP_CTL or VOBU_UOP_CTL. UOP9 specifies prohibition/authorization of the back scan (already return) by the user, and is contained in PGC_UOP_CTL or VOBU_UOP_CTL. UOP10 specifies prohibition/authorization of the title menu call by the user, and is contained in PGC_UOP_CTL or VOBU_UOP_CTL.

[0039] UOP11 specifies prohibition/authorization of the root menu call by the user, and is contained in PGC_UOP_CTL or VOBU_UOP_CTL. UOP12 specifies prohibition/authorization of the subimage menu

call by the user, and is contained in PGC_UOP_CTL or VOBU_UOP_CTL. UOP13 specifies prohibition/authorization of the audio (voice) menu call by the user, and is contained in PGC_UOP_CTL or VOBU_UOP_CTL. UOP14 specifies prohibition/authorization of the angle-type menu call by the user, and is contained in PGC_UOP_CTL or VOBU_UOP_CTL. UOP15 specifies prohibition/authorization of the par TOOBU title (chapter) menu call by the user, and is contained in PGC_UOP_CTL or VOBU_UOP_CTL. UOP16 specifies prohibition/authorization of the resume actuation by the user, and is contained in PGC_UOP_CTL or VOBU_UOP_CTL. UOP17 specifies prohibition/authorization of various button grabbing (high order carbon button selection, low order carbon button selection, left carbon button selection, right carbon button selection, carbon button decision, or carbon button selection and decision) by the user, and is contained in PGC_UOP_CTL. UOP18 specifies prohibition/authorization of the still (still picture) off actuation by the user, and is contained in PGC_UOP_CTL or VOBU_UOP_CTL. UOP19 specifies prohibition/authorization of the pause (halt)-on actuation by the user, and is contained in PGC_UOP_CTL or VOBU_UOP_CTL. In addition, it may be used for UOP19 specifying prohibition/authorization of user actuation of pause-off or menu language selection. UOP20 specifies prohibition/authorization of the voice stream modification actuation by the user, and is contained in PGC_UOP_CTL or VOBU_UOP_CTL. UOP21 specifies prohibition/authorization of the subimage stream modification actuation by the user, and is contained in PGC_UOP_CTL or VOBU_UOP_CTL. UOP22 specifies prohibition/authorization of the angle-type modification actuation by the user, and is contained in PGC_UOP_CTL or VOBU_UOP_CTL. In addition, it may be used for UOP22 specifying prohibition/authorization of user actuation of parental level selection or parental application country selection. UOP23 which is not illustrated specifies prohibition/authorization of the karaoke voice playback mode change actuation by the user, and is contained in PGC_UOP_CTL or VOBU_UOP_CTL. UOP24 specifies prohibition/authorization of the video playback-mode modification actuation by the user, and is contained in PGC_UOP_CTL or VOBU_UOP_CTL.

[0040] A fundamental playback procedure including the actuation in the case of reading recording information in the disk of drawing 2 by the DVD player of drawing 1 is explained below, referring to drawing 6 - drawing 9 .

[0041] Drawing 6 is flow chart drawing explaining the initial actuation in the case of reading recording information in the disk of drawing 2 by the DVD player of drawing 1 (usually before playback initiation).

[0042] first, the DVD disk 10 is set to the disk tray (not shown) of the DVD player of drawing 1 , if the closing carbon button which is not illustrated on the actuation key panel (or remote controller) 12 of drawing 1 is pushed, and a play carbon button is pushed in the condition under halt after a disk is set or, revolution actuation of the disk 10 will be carried out (step ST 10), and reading will be started from the lead-in groove area (step ST 12). Then, the volume descriptor in a disk 10 (logical-block number LBN:030000H) is read (step ST 14), and the judgment of whether this disk is a DVD disk is performed. It is whether the standard identifier Standard Identifier in a volume descriptor is "CD001", and, specifically, can judge whether the set disk is CD and whether it is DVD. If the set disk is CD (no [step ST16], step ST18 yes), it will move to CD regeneration. Processing will be ended if the set disk is not DVD or CD, either (no [step ST16], no [step ST18]).

[0043] If the set disk is DVD (step ST16 yes), a root directory record will be read (step ST 20), and directory "VIDEO_TS" in which close [of a DVD video data] is will be searched (step ST 22). If the searched directory is not "VIDEO_TS" (no [step ST24]), retrieval of other directories will be continued (steps ST26, ST22, and ST24). Processing is ended if "VIDEO_TS" is not found to the last (no [step ST26]). If directory "VIDEO_TS" is found (step ST24 yes), a VTS subdirectory file search will be performed (step ST 28), and the record of a VTS subdirectory will be read (step ST 30). Processing is ended if "VIDEO_TS.IFO" which includes the video manager information VMGI in the record is not found (no [step ST32], no [step ST34]). If "VIDEO_TS.IFO" containing VMGI is found (step ST32 yes), it will shift to the usual DVD regeneration.

[0044] Drawing 7 - drawing 9 are flow chart drawings explaining the usual regeneration in the case of reproducing the content of record from the disk of drawing 2 by the DVD player of drawing 1 .

[0045] In drawing 7 , video manager information management table VMGI_MAT is read from VMGI of "VIDEO_TS.IFO" (step ST 40). Although not illustrated, in this VMGI_MAT, starting address TXTDT_MG_SA and others of VTS_Ns which shows the number of title sets, starting address TT_SRPT_SA of a title search pointer table, and a text data manager are described. Based on these description, several Ns of a title set are set, the address of TT_SRPT is set, and the address of TXTDT_MG is set (step ST 42).

[0046] Then, according to the information on VMGI, a video manager menu (title menu of drawing 4) is reproduced, and VMG menu processing which displays a title menu on monitor display is performed (step ST 44). TT_SRPT in VMGI is read here (step ST 46), and two or more selectable titles are displayed on the VMG menu (title menu) (when two or more titles are recorded on the disk 10). The user of the DVD player 1 of drawing 1 can choose a desired title from the displayed title menu. The title number M (M below or more 1N) which should be reproduced is determined by this selection (step ST 48). Specifically, as for TT_SRPT read at a step ST 46, one (TT_SRP#M) of pieces [them] is determined at a step ST 48 including title search pointer TT_SRP#1 of N individual - TT_SRP#N.

[0047] Determined title search pointer TT_SRP#M contains starting address information VTS_SA of the selected title (VTS#M). The starting address of target VTS#M can be known by this VTS_SA. From this starting address, the address of the video title set information VTSI arranged at the head of VTS#M is set (step ST 50). Next, video title set information management information VTSI_MAT is read out of this VTSI (step ST 52). Although not illustrated, this VTSI_MAT includes the information on the attribute about video, an audio, and each subimage, the number of streams, and others. Based on such information, the video decoder, audio decoder, and subimage decoder in the DVD player of drawing 1 are initialized (step ST 54). Then, according to the information on VTSI, a video title set menu (root menu of drawing 4) is reproduced, and VTS menu processing which displays a root menu and its lower layer various menus (an audio menu, a subimage menu, chapter menu, etc.) on monitor display is performed (step ST 56).

[0048] Next, in drawing 8 , PATOOBU title search pointer table information PTT_SRPTI in VTSI is read (step ST 58), and a playback title unit (what summarized one or more chapter groups when pointing out the group of one or more PTT_SRP in a playback title and seeing from the user) is displayed on monitor display (step ST 60). This title unit number n becomes below or more 1N (N is the number of sum total titles in an applicable disk). A user's selection of the specific title unit which should be reproduced from the VTS menu (a chapter menu / the PTT menu) reads PTT_SRPT in VTSI corresponding to the selected title unit (step ST 62). From read PTT_SRPT, the program chain number PGCN and program number PGN for playback are determined (step ST 64). In addition, although this PTT_SRPT does not illustrate, n title unit search pointer TTU_SRP is included, and each TTU_SRP contains one or more PTT search pointers.

[0049] Next, video title set PGC information table VTS_PGCIT in VTSI is read (step ST 66), and all the data of this VTS_PGCIT are saved in the work-piece memory section 7 of drawing 1 (step ST 68). In this saved VTS_PGCIT, each VTS_PGCI_SRP contains category information VTS_PGC_CAT of VTS_PGC including one or more search pointer VTS_PGCI_SRP. This VTS_PGC_CAT includes the block type information that it identifies whether an applicable PGC block is a parental block, and the information on a parental ID field. (Step ST70 Yes), when it is shown that the above-mentioned block type is a parental block, based on the information on a parental ID field, parental processing of whether to reproduce the content of the parental block is performed (step ST 72). This parental processing is used in order to make it not show a child the content for adults. When the object processed at a step ST 72 corresponds to parental actuation (parental locked), the increment of the (Step ST74 Yes) program chain number PGCN is carried out (step ST 76), and it moves to the block of the following PGC number. (Step ST74 No), when this applicable PGC block does not correspond to parental actuation (not parental locked), PGCI corresponding to the PGC number is taken out out of the data of PGCIT saved at a step ST 68 (step ST 78). (Step ST70 No), in addition, when judged with it not being a parental block in a step ST 70, processing of the above-mentioned steps ST72-ST76 is skipped.

[0050] PGCI taken out at a step ST 78 contains program chain general information PGC_GI. Although this PGC_GI does not illustrate, it contains PGC audio stream control table PGC_AST_CTLT, PGC secondary image stream control table PGC_SPST_CTLT, PGC secondary image pallet PGC_SP_PLT, etc. other than PGC_UOP_CTL shown by drawing 2 . Based on such information (PGC_AST_CTLT, PGC_SPST_CTLT, PGC_SP_PLT, etc.), various initialization of a subimage and an audio, such as which subimage pallet is used for the color display of a subimage or as what to use the voice channel to reproduce, is performed (step ST 80). To each decoder in the DVD player 1 of drawing 1 , initial setting for playback is performed and, specifically, the address of the table used for playback is saved in the work-piece memory section 7.

[0051] Next, in drawing 9 , video title set cell address table VTS_C_ADT in VTSI is read (step ST 82), and all the data in VTS_C_ADT are saved in the work-piece memory section 7 of drawing 1 (step ST 84). The starting address and ending address of all cels are described by this saved VTS_C_ADT, and all the interleaved units in VTSTT_VOBS are further described. Specifically, one or more video title set cel piece information VTS_CPI (not shown) is described by VTS_C_ADT. Although each VTS_CPI does not illustrate, it contains ID number VTS_VOB_IDN of VOB to applicable video title set cel piece VTS_CP, cel ID number VTS_C_IDN to VTS_CP, starting address VTS_CP_SA of VTS_CP, ending-address VTS_CP_EA of VTS_CP, etc.

[0052] Next, command table PGC_CMDT in PGCI is taken out from the data saved in the work-piece memory section 7 in the step ST 68 of drawing 8 (step ST 86). One or more PURIKO mand PRE_CMD, one or more postcommand POST_CMD(s), one or more cel command C_CMD, etc. are contained in this PGC_CMDT. PURIKO mand (pretreatment command) PRE_CMD of them is performed (step ST 88), and program-number PGN for command processing and cel ID number VTS_C_IDN are saved in the work-piece memory section 7 of drawing 1 (step ST 90). Next, it is judged whether the cel corresponding to the cel ID number saved at a step ST 90 is reproduced at random. (Step ST92 Yes), when reproducing at random, the random number (random number) R is generated with a random function inside [MPU2] drawing 1 , and it goes into regeneration of the cel of the cel ID number corresponding to this random number R (step ST 96). (Step ST92 No), when not carrying out random playback, processing of steps ST94-ST96 is not performed, but processing which performs cel playback corresponding to one or more VTS_CPI in VTS_C_ADT is performed (step ST 98).

[0053] then, still time amount (0 - 254 seconds -- or unrestricted) is set up by the navigation system (step ST 100), and a still (PGC still) is performed only for the set-up time amount (step ST 102). Then, postcommand (after-treatment command) POST_CMD contained in command table PGC_CMDT in PGCI is performed (step ST 104), the PGC number PGCN is updated (step ST 106), and PGCN after updating is read. If PGCN after updating is not zero (no [step ST108]), processing from the step ST 70 of drawing 8 to the step ST 106 of drawing 9 will be rerun. If PGCN after updating is zero (step ST108 yes), since there will be no next PGC, usual regeneration of drawing 7 - drawing 9 is ended.

[0054] Drawing 10 is flow chart drawing explaining the processing in the case of reproducing the content of record of a cel from the disk of drawing 2 by the DVD player of drawing 1 .

[0055] Initiation of cel playback determines the playback starting address (logical-block number LBN) of an applicable cel from the content of PGCI saved in the work-piece memory section 7 of drawing 1 (step ST68 reference of drawing 8) (step ST 204). (step ST200 yes) Specifically, in PGCI, this C_PBIT contains one or more cel playback information C_PBI (not shown) including cel playback information table C_PBIT (not shown). every -- although C_PBI does not illustrate, it contains cel category C_CAT including the information which shows whether an applicable cel is angle iron, playback time amount C_PBTM of an applicable cel, starting address C_FVOBU_SA of the head VOBU in an applicable cel, ending-address C_FILVU_EA of the head interleave unit in an applicable cel, starting address C_LVOBU_SA of Last VOBU in an applicable cel, ending-address C_LVOBU_EA of Last VOBU in an applicable cel, etc. Among those, C_FVOBU_SA can determine the playback starting address of an applicable cel. In this way, a read-out instruction is set to the disk drive section 5 of drawing 1 based on the determined address (step ST 206).

[0056] If a read-out instruction is set, the disk drive section 5 will read VOBU from the address determined at a step ST 204. Then, the navigation pack (NV_PCK of drawing 3) arranged at the head of VOBU by which reading appearance was carried out is incorporated (step ST 208), and it is stored in the work-piece memory section 7 of drawing 1 . Based on the synchronization information included in the DSI data in this NV_PCK (drawing 3), the internal-system timer clock STC of the DVD player 1 of drawing 1 (not shown) etc. is set up (step ST 210). The highlights information HLI is included in the PCI data (drawing 3) of this NV_PCK. Navigation pack processing including highlights processing of a menu etc. is performed using this HLI etc. (step ST 212). (Step ST214 Yes), then, when a VOBU still is performed, waiting (step ST 216) and VOBU still processing are started till playback termination of Relevance VOBU (step ST 218). This VOBU still is continued until the still time amount of this VOBU still is unrestricted, for example, a user does a playback key stroke. (Step ST214 No), when a VOBU still is not performed, steps ST216-ST218 are skipped.

[0057] (Step ST220 No), after navigation pack processing (step ST 212) or VOBU still (step ST 218) discharge, when the object for playback in the event is not the last of an applicable cel, processing of steps ST210-ST218 is repeated. (Step ST220 Yes), when the object for playback in the event is the last of an applicable cel, waiting (step ST 224) and cel still processing (still playback of the set-up time amount) are started till playback termination of Relevance VOBU (step ST 226). After cel still processing, when there is a cel command (step ST228 yes), cel command processing is made (step ST 230), and a return is carried out to other manipulation routines. When there is no cel command (no [step ST228]), the return of the cel command processing is carried out to other manipulation routines, without being made.

[0058] Drawing 11 shows the processing which reads user actuation prohibition information (a part of UOP0-UOP24 of drawing 5 or wholly) in the disk of drawing 2 by the DVD player of drawing 1 . These a part or all of UOP0-UOP24 is saved in the work-piece memory section 7 of drawing 1 .

[0059] The function to perform a sequential-operation guide is added in the equipment concerning the gestalt of 1 implementation of this invention.

[0060] The remote controller for operating by remote control is shown in drawing 12 . Various kinds of actuation keys are prepared in this remote controller 500. 501 is a power button and a power source can be turned on and off by operating this. 502 is a disk selection carbon button and can choose the disk 1 or disk 2 with which the player is loaded by operating this.

[0061] 503 is a navigation carbon button (it may be called NABIBOTAN for short), and a navigation menu will be displayed if this is operated. This navigation menu appears on the screen of a display (for example, 20 of drawing 1), as shown in drawing 13 . The image information of this navigation menu is stored in data memory 2C of drawing 1 .

[0062] As a navigation menu, the display of items, such as "V-Remote", "AngleViewer", "Zoom", "Strobe Viewer", "Preview", "DNR", "Capure", "Title", "Chapt.:", "Audio:", "Subtitle", "Angle:", and "BitRate:", appears. With the equipment concerning the gestalt of 1 implementation of this invention, if a remote controller is operated, cursor is doubled with a desired item and ENTA actuation is performed by the remote controller with this navigation menu, a lower layer menu will appear in the pan of each item.

[0063] It returns to drawing 12 and the carbon button of a remote controller 500 is explained. 504 is a setup carbon button, and if this is operated, the icon for performing various kinds of setups on a screen will appear. As an icon, there are picture activation setting, sound output setting, language setting, display setting, operational research setting, and initial setting.

[0064] As picture activation setting, there are setting out of the aspect ratio according to the aspect ratio (is it 4:3 or 16:9?) of an indicating equipment, adjustment of black level, adjustment of image quality, etc. When progressive television is connected as an indicating equipment, there are selection of a video outlet in case the image currently recorded on the DVD disk else [, such as the image quality adjustment,] is the aspect of 4:3, method selection of the output signal at that time, etc.

[0065] There is setting out of attenuation in case on-off selection of voice in case selection of the type of output of an audio, control of a dynamic range, and the disk for karaoke are played as sound output setting according to the audio equipment connected, and Audio CD are reproduced.

[0066] Moreover, as language setting, there are setting out of the language in setting out of the language displayed on a screen and a menu display, setting out of audio language, and setting out of the language of a subimage.
[0067] There are setting of whether to perform the display which shows operating state to the screen of an indicating equipment as display setting, the color of the background and selection of a picture, and selection of whether to turn ON a screen saver.
[0068] Moreover, after selection of the resolution (the field or frame level) of the still drawing at the time of a pause, turning on and off of a parental lock function, selection of whether to make a sound which calls the command of remote control Py at the time of a carrier beam, and title playback finish as operational research setting, when reproducing [whether it stops automatically and] a video CD, there is setting out of whether to take out a menu screen etc. Moreover, as initial setting, there are language on a screen, TV format, audio selection, etc.
[0069] The remote controller 500 is equipped with the quick carbon button 505. A push on this quick carbon button 505 displays the menu image of actuation items, such as "memory", a "memory list", "a repeat", randomness, a "bit rate", a "text", "a disk selection", and "Exit (termination directions which slip out of quick processing) etc."
[0070] If "memory" is chosen during a playback halt period, a memory list will appear. In a memory list, the item of a "disk number", a "title number", and "a chapter number or a track number" appears. A user can move cursor to the location of each item, and the disk to play, a title, a chapter, etc. can be specified by pushing the number carbon button (ten key actuation) of hope here. And if the content which pushed and specified the en turbo tongue is determined and a play carbon button is pushed, a title, a chapter, etc. which were specified are reproducible. That is, the sequence to reproduce is programmable.
[0071] Selection of "a repeat" displays items, such as "an A-B repeat", "a chapter repeat", "a title repeat", "a truck repeat", "a disk repeat", and "an all repeat." If the repeat system of hope is chosen, the start point / ending point of a repeat are specified and a play carbon button is operated, selection / specified repeat of the content will be performed.
[0072] Selection of "random" displays items, such as "chapter random", "title random", "truck random", "all random", and "random-off." If the item of hope is specified here and a play carbon button is pushed, random playback based on the selected item will be performed. The bit rate which will be transmitted if a "bit rate" is chosen is displayed. Selection of a "text" displays the text currently recorded on the disk. For example, it is a manufacturer's comment etc.
[0073] 506 of a remote controller 500 is an audio carbon button. If it is operated while reproducing this, the language of a current audio output, a recording method, and a channel will be displayed. Moreover, if this carbon button is pushed while setting the point, the language selection menu of an audio output, the setting-out menu of a recording method, etc. are displayed, and a user can choose it as arbitration. However, when there is no recording method, it is set as the method currently automatically recorded at the time of playback. In addition, selection of each item of a menu can also specify the menu item of hope in this system by moving cursor, choosing and then pushing the en turbo tongue of a remote controller 500 on the remote control screen displayed on an onscreen display.
[0074] What is necessary is just to push the audio carbon button 506 further to change this, although the language of a current audio output, a recording method, and a channel will be displayed if the audio carbon button 506 is pushed during playback. Then, the class of language currently recorded on the disk changes, and it is displayed, and the simultaneous recording method, a channel, etc. are doubled and displayed. For example, a display changes from the display of "ENG PCM 2CH" like "SPA PCM2CH." An English simple form and SPA mean a Spanish simple form, as for ENG, PCM means pulse code modulation, and 2CH means ****** for a stereo.
[0075] 507 of a remote controller 500 is a subtitle carbon button. If it is operated while reproducing this, it will indicate what kind of language language, such as a title by which current selection is made, is on a screen. For example, supposing English is chosen as a current subtitle, it will be displayed on the **** "ENG" by some screens. In the case of French, "FRE" and the alphabetic character in which simple [of

the case of "SPA" and Japanese] was carried out to "JN" flume **** in the case of Spanish are displayed. When a subtitle is pushed one after another, the language to choose will change each time.
[0076] 508 of a remote controller 500 is an angle-type carbon button, and if this carbon button is pushed, the angle type under current playback will be displayed like 1/5. Although there are five of this as an angle-type stream of the image currently recorded on the disk, it means that it is the 1st stream of them. What is necessary is just to push the angle-type carbon button 508 further to change an angle type. Then, an angle-type stream can be changed one after another.
[0077] 509 of a remote controller 500 is a menu button. If this carbon button 509 is pushed, the menu image currently recorded on the disk can be used. This can enter the menu screen currently recorded on the disk as previous drawing 4 explained. 511 of a remote controller 500 is a top menu carbon button, and if this is pushed, the head image of the chapter of each title will appear as a menu. What this menu image is also beforehand recorded on the disk is used. When there are two or more titles and chapters, two or more head images appear. If cursor is doubled with the image of hope and an en turbo tongue is operated, playback of the title corresponding to the image concerned or a chapter will be started.
[0078] 510 of a remote controller 500 is a video remote control carbon button. If it pushes while reproducing this carbon button, a graphic remote control image will appear on a screen.
[0079] By this image, the title number under playback, a chapter number, a stream selection situation, the playback direction, and the graph for speed selection appear.
[0080] Drawing 14 (A) shows an example of the above-mentioned graphic remote control image.
[0081] 600 is the whole display screen and the graphic remote control image (it omits below and abbreviates to a glass-fiber-reinforced-cement screen) displayed on a part of this screen includes the 1st screen 601 in which the title number and chapter number under playback are shown, and the 2nd screen 602 used for actuation and selection. Furthermore, there are the stream selection image 611 and the speed selection image 612 in the 2nd image 602.
[0082] The above-mentioned glass-fiber-reinforced-cement image is projected in the translucent condition (or spaced condition) so that the image under playback may not serve as a blind thoroughly. The image under playback is an animation, checking the image which a user is reproducing, it is because equipment was operated and this point is also this system feature.
[0083] The audio selection image 611, the subtitle selection image 612, and the angle-type selection image 613 are contained in the further above-mentioned stream selection image 610. Moreover, the navigation selection image 621, the forward direction high-speed playback selection image 622, the hard flow high-speed playback selection image 623, the forward direction skip playback selection image 624, the hard flow skip playback selection image 625, the forward direction slow playback selection image 626, the hard flow slow playback selection image 627, the pause selection image 628, and the usual playback selection image 629 are contained in the above-mentioned speed selection image 612.
[0084] A user can operate remote control equipment 500, can move cursor, and can move cursor to the location of the actuation item of hope. And if the enter key of a remote controller 500 is pushed, a low-ranking hierarchy's menu image will appear in the pan of the selected item. Or playback corresponding to the content of actuation is realized as it is.
[0085] 512 of a remote controller 500 is a cursor control carbon button (refer to drawing 14 (B) and drawing 12). The cursor control carbon button 512 is an anchor ring, and can control the migration direction (the upper and lower sides, right and left, the direction of slant) of cursor according to the location (include angle) which pushes this carbon button 512. The en turbo tongue 513 is arranged in the center of this cursor control carbon button 512. The item of the part which cursor moved can be decided by pushing this en turbo tongue 513.
[0086] It returns and explains to drawing 12 . 514 of a remote controller 500 is a jog control carbon button, and if this is usually rotated during playback, it is controllable according to a hand of cut in the forward direction high-speed playback or the hard flow high-speed playback condition.
[0087] 515 of a remote controller 500 is a return carbon button, and if this carbon button 515 is operated, it can return a menu image to the menu image in front of the present image.

[0088] 516 of a remote controller 500 is a clear carbon button. For example, if this clear carbon button 516 is operated when having inputted a title number and a chapter number to reproduce by the menu image with the ten key, a number is cleared and it can reinput again.
[0089] 517 of a remote controller 500 is the skip carbon button 517. This skip carbon button 517 is pushed to skip on the next chapter and next truck of the forward direction during playback. 518 is a skip carbon button. This skip carbon button 518 is pushed to skip on the chapter and truck of hard flow during playback.
[0090] 519 of a remote controller 500 and 520 are used to see an image in slow motion, and each is the forward direction slow playback carbon button and a hard flow slow playback carbon button.
[0091] 521 of a remote controller 500 is a play carbon button. Moreover, 522 is a stop button and 523 is a pause carbon button.
[0092] 524, 525, and 526 of a remote controller 500 are a zoom carbon button. If a carbon button 524 is pushed, it will become zoom mode, if a carbon button 526 is pushed, a scale factor will become large, and a scale factor will become small if a carbon button 525 is pushed. The zoom point can be returned to middle of the screen, if the clear carbon button 516 is pushed. In order to move the zoom point, the cursor control carbon button 512 can be operated and it can be made to move. If a carbon button 524 is repeated and pushed, zoom-off will be displayed, zoom mode will become off and it will usually become a playback mode.
[0093] The carbon button 527 of a remote controller 500 is a digital noise reduction (DNR) setup key, and will change extent (OFF, weakness, strength) of the digital noise reduction effectiveness by repeating and pushing this carbon button.
[0094] The carbon button 528 of a remote controller 500 is a color stream selection carbon button. In DVD, since there are progressive I/O and interleave I/O, the case where either is chosen arises according to a display or record regenerative apparatus (for example, VTR etc.). Then, a selection change can be performed by operating this carbon button 528.
[0095] The carbon button 529 of a remote controller 500 is a carbon button for changing the brightness in the display of equipment. The carbon button 530 of a remote controller 500 is in the condition displayed on alphabetic character screens, such as a title and a chapter, and it is pushed to erase this display. 531 of a remote controller 500 is a ten key.
[0096] The carbon button 533 of a remote controller 500 is a repeat button. Whenever it pushes this carbon button, a mode of operation changes to each mode of a chapter repeat, a title repeat (truck repeat), a disk repeat, an all repeat, and repeat-off. If a carbon button 532 can set up the repeat of the range of Point B from Point A and this carbon button 532 is pushed, it will serve as a mode of operation for setting up Point A and Point B.
[0097] A carbon button 534 is a memory carbon button, and if it pushes when equipment has suspended this carbon button, the list image for carrying out memory will appear on a screen. This image shows the item of the De Dis number, a title number, and a chapter number. Then, a user can move cursor to the tooth-space location corresponding to each item, and can do the figure input of a disk number, a title number, and the chapter number using a ten key. Next, a push on a play carbon button reproduces the title and chapter of a number which were entered in this memory list. For example, what is necessary is to display a memory list, to move cursor, to double with the display position of the number concerned and just to push a clear carbon button to carry out chapter number cancellation of the specification.
[0098] The carbon button 535 of a remote controller 500 is a random playback carbon button. Random playback of the truck which carries out random playback of the chapter whenever it pushes this carbon button and which carries out title random playback is carried out, and which random off item that carries out all random playback is displayed repeatedly. When the item of hope is displayed and a user pushes a play carbon button, random playback will be carried out from the content of the item concerned.
[0099] 540 of a remote controller 500 is a lid, and as shown in drawing 12 (B), the television actuation key section 541 is formed in the side front of this lid 540.
[0100] Drawing 15 is a flow chart which shows the actuation in the case of displaying the graphic remote

control image which constitutes the description of this invention, and operating a regenerative apparatus.
[0101] A push on the video control carbon button 510 (refer to drawing 12) displays a graphic remote control image which was explained by drawing 14 . When processing about this graphic remote control image and control of the mode of operation of a regenerative apparatus are performed, remote control actuation information operates in relation to graphic remote control image-processing section 2H shown in drawing 1, management information processing section 2I, multiprocessing section 2J, translucence processing section 2K, and a pan with user interface creation section 2A, menu judging section 2B, and OSD memory 2C.
[0102] When a video control carbon button is pushed (steps C1 and C2), reading appearance of the information on a graphic remote control image is carried out from OSD memory 2C (step C3), and it is once stored in graphic remote control image-processing section 2H. And multiplex [of the title number under playback stored in management information processing section 2I, the chapter number, etc.] is carried out (step C4). Moreover, multiplex [of the simple notation information on the language of an audio stream by which current selection is made, the simple notation information on the language of a subtitle, the number of an angle type, etc.] is carried out. In the simple notation of the language of "EN" (English is meant) and a subtitle, in the example of drawing 14 , the number of "JN" (Japanese is meant) and an angle type is [the simple notation of audio language] "one fifth" (the 1st angle type is meant among five angle types).
[0103] Next, the information on a graphic remote control image is piled up to the information on the Maine image. In this case, processing for projecting in the translucent condition (or spaced condition) is performed so that the image under playback may not serve as a blind thoroughly (step C5). This is attained by control of the intensity level of the graphic remote control image to the Maine image in translucence processing section 2K. In addition, it may consider as the processing for projecting in the translucent condition (or spaced condition), in addition infanticide processing may be performed for the data of a graphic remote control image in the direction of a time-axis.
[0104] The information on the graphic remote control image processed as mentioned above lays on top of the information on the Maine image, and is displayed on the screen of a display (step C6). Next, when it is judged and operated whether the cursor control carbon button 512 as shown in drawing 14 (B) was operated, processing which moves cursor according to actuation is performed (steps C7 and C8). The technique usually performed can attain cursor advance processing.
[0105] Next, if it turns out that it judged and (step C9) pushed whether the en turbo tongue 513 was pushed, the command corresponding to the manual operation button specified with cursor will be determined (step C10), and the command concerned will be sent to the mode-of-operation change section (step C11). (although the mode-of-operation change section is not illustrating, prepared in MPU2 of drawing 1) As a mode of operation, as drawing 14 explained, for example, the navigation selection image 621, the forward direction high-speed playback selection image 622, the hard flow high-speed playback selection image 623, the forward direction skip playback selection image 624, the hard flow skip playback selection image 625, the forward direction slow playback selection image 626, the hard flow slow playback selection image 627, the pause selection image 628, and the mode of operation corresponding to the playback selection image 629 are usually.
[0106] Next, after changing a mode of operation, the judgment of whether whether fixed time amount progress having been carried out and an elimination carbon button were operated is performed (step C12). Although an elimination carbon button is not shown in drawing 12 , an equivalent function can be obtained by continuing pushing a video remote control carbon button a double click or beyond predetermined time, for example.
[0107] When a graphic remote control image disappears from a screen, the information on the graphic remote control image concerned is accumulated in memory (for example, area secured to the graphic remote control image-processing section), and a display output is turned off (step C13).
[0108] Next, when a video control carbon button is pushed while having played the same disk as the above, reading appearance of the information on the graphic remote control image stored in the memory

concerned is carried out first.
[0109] Especially drawing 16 shows actuation when the item of the audio selection image 611 in the stream selection image 610, the subtitle selection image 612, and the angle-type selection image 613 is specified in detail in the content of step C10.
[0110] Moreover, drawing 17 has illustrated audio attribute information and subpicture attribute information among the management information used with the equipment concerning the gestalt of 1 implementation of this invention.
[0111] When the en turbo tongue 513 is pushed, as for the image specified by cursor, the judgment of the audio selection image 611, the subtitle selection image 612, and the angle-type selection image 613 is performed (steps D1, D2, and D3).
[0112] Supposing the audio selection image 611 was now specified by cursor, reading appearance of the management information will be carried out from the part which has memorized the management information of the disk under playback, and the attribute information about an audio stream will be referred to from it (step D4). It is recorded on VTSI as a video title set audio stream attribute table (VTS_AST_ATRT) so that the attribute information about an audio stream may be illustrated to drawing 17 , and the information which shows what kind of language the language of each stream of an audio is in this attribute table is described.
[0113] So, with the equipment concerning the gestalt of 1 implementation of this invention, the simple notation alphabetic character of language is displayed on the numerical order of a stream from the language by which the default is carried out, referring to this attribute table (steps D5 and D7). A display position is the part shown by drawing 14 . When it passes fixed time, without operating an en turbo tongue, it is a time of pushing the predetermined location of a cursor carbon button at the change event. Since it is that the audio stream of the language concerned is chosen when the simple graphic character of the language of hope of a user appears, an enter key is pushed (step D6).
[0114] Moreover, now, the subtitle stream selection image 612 is specified by cursor, and presupposes that the enter key was pushed. Then, management information is read from the part which has memorized the management information of the disk under playback, and the attribute information about a subtitle stream is referred to (step D8). The attribute information about a subtitle stream is also recorded on VTSI as a video title set subpicture stream attribute table (VTS_SPST_ATRT), and the information which shows what kind of language the language of each stream of a subtitle is in this attribute table is described.
[0115] So, with the equipment concerning the gestalt of 1 implementation of this invention, the simple notation alphabetic character of language is displayed on the numerical order (steps D9 and D11) of a stream from the language by which the default is carried out, referring to this attribute table. A display position is the part shown by drawing 14 . When it passes fixed time, without operating an en turbo tongue, it is a time of pushing the predetermined location of a cursor carbon button at the change event. Since it is that the subtitle stream of the language concerned is chosen when the simple graphic character of the language of hope of a user appears, an enter key is pushed (step D10).
[0116] Moreover, now, the angle-type selection image 613 is specified by cursor, and presupposes that the enter key was pushed. Then, reading appearance of the management information is carried out from the part which has memorized the management information of the disk under playback, and the attribute information about an angle type is referred to from it. The attribute information about an angle type is described by the angle-type information in PCI of drawing 3 , or DSI. For example, in the case of DVD, the stream of nine angle types can be divided and recorded. The unit of division is called an interleave unit, and this interleave unit is interleaved and it is recorded. Angle-type information is described by the next address of the next INTARIBU unit of self of each stream, and the size of a unit. Therefore, it can recognize how many the stream of an angle type is recorded by referring to this angle-type information.
[0117] So, with the equipment concerning the gestalt of 1 implementation of this invention, it can grasp whether the angle type chosen now is an angle type of the stream of what [the] position with reference to angle-type information. Based on this grasp, as shown in drawing 14 , a display like angle types 1/5 can be obtained (step D13). If the angle-type selection image 613 is specified by cursor and an enter key is

pushed, a change of the display which shows the angle type which is making current selection will be attained. If the position of for example, a cursor control carbon button is pushed here, the display which shows the following angle type will be obtained. For example, it is obtained like two fifths. Thus, an angle type can be changed one after another (step D15). If an angle-type display changes, it will change to the angle type which also specified the image stream currently naturally reproduced. Then, a user will push an enter key, when the stream of the angle type of hope is obtained (step D14).

[0118] The content of description of the video title set audio stream attribute table (VTS_AST_ATRT) described by VTSI described previously and the content of description of a video title set subpicture stream attribute table (VTS_SPST_ATRT) are shown in drawing 18 in more detail.

[0119] Drawing 19 is a flow chart explaining the content of processing of the background-image incorporation system in the equipment concerning the gestalt of 1 implementation of this invention.

[0120] Moreover, drawing 20 is drawing showing the example of image display acquired by processing of drawing 19 .

[0121] The remote controller 500 shown in drawing 12 is equipped with the navigation carbon button (NABIBOTAN) 503. The image information of a navigation menu is taken out from data memory 2C of drawing 1 as this navigation carbon button 503 is pushed, and a navigation menu which is illustrated on the screen of TV (indicating equipment)20 of drawing 1 at drawing 13 is displayed (step ST 502). (step ST500 yes)

[0122] This navigation menu includes items, such as "V-Remote", "Angle Viewer", "Zoom", "Strobe Viewer", "Preview", "DNR", and "Capure", as shown in drawing 13 .

[0123] "Capure" is chosen from this navigation menu by actuation (cursor key actuation) of the cursor control carbon button 512 of a remote controller 500, and a screen display of the OSD menu which is illustrated that the en turbo tongue 513 of a remote controller 500 is pushed to drawing 20 (A) is carried out (step ST 506). (step ST504 yes)

[0124] Translucent processing of this OSD menu is suitably carried out by translucence processing section 2K of drawing 1 , and it is superimposed and displayed on the playback image of the DVD disk 10. (If this OSD menu size is small compared with the size of the whole playback image and there is no trouble in the content check of a playback image, it is not necessary to carry out translucent processing of this ODS menu)

Next, a user pushes the pause carbon button 523 of a remote controller 500 on a favorite screen, looking at the playback image from a disk 10 (step ST508 yes). Then, the screen for which a user asks is displayed as a still picture with the above-mentioned OSD menu so that it may illustrate to drawing 20 (B) (step ST 510). You may make it display the animation repeated by short-time time amount (for example, 1 second - about 10 seconds) instead of a still picture pause from the flash when the pause carbon button 523 was pushed in that case.

[0125] After the still picture (or animation which carries out a short-time repeat) for which a user asks was displayed, If "preservation "Storing"" is chosen from the ODS menu on a screen by cursor key actuation of a remote controller 500 and the en turbo tongue 513 is pushed The still picture (or animation which carries out a short-time repeat) currently then displayed on the screen is incorporated by the work-piece memory section 7 of drawing 1 as "a background image / background image" or a "wallpaper image" (step ST 512).

[0126] the item of "Storing" in the OSD menu of drawing 20 (A) in under preservation of this still picture (or short-time animation) -- blinking -- the present preservation -- a user is notified of a working thing (during this flash period, it can constitute so that other menu manipulation cannot be performed).

[0127] If a user chooses "Navi" from the OSD menu of drawing 20 (A) and pushes the en turbo tongue 513 after the above "preservation "Storing"" is completed (step ST516 yes), it will return to the navigation menu of drawing 13 .

[0128] (Step ST518 Yes), on the other hand, when a user chooses "Exit" from the OSD menu and pushes en turbo tongue 513, it ends and usually moves from navigation menu processing to the menu screen of playback or a DVD disk, or the standby condition before playback initiation (or idle state of a DVD

player).
[0129] When the equipment (DVD player) of drawing 1 is in a standby condition or a idle state and incorporation of the still picture (or short-time animation) by the above-mentioned "Capure" processing is not made, the specific image (an animation which is used for the still picture or screen saver containing a player manufacturer's LOGO, or blue back) which the DVD player prepared beforehand is displayed on the screen of TV20 of drawing 1 .
[0130] On the other hand, when the equipment (DVD player) of drawing 1 is in the standby condition or idle state of playback initiation after incorporation of a still picture (or short-time animation) is made by the above-mentioned "Capure" processing, the incorporated still picture (or short-time animation) is displayed as a background image on the screen of TV20 of drawing 1 (in the case of an animation, it is repeat playback of a short-time loop formation).
[0131] In addition, through the external memory slot which is not illustrated, when capacity is insufficient for the work-piece memory section 7 of the equipment of drawing 1 memorizing an animation, it can constitute so that duplication of external memory (RAM or EEPROM) may be possible. Thus, when having come to be able to perform duplication of memory, the above-mentioned "Capure" processing can be incorporated for the animation of die length according to the resolution (the number of configuration pixels per frame) of memory space and an animation etc. to this add in memory.
[0132] A screen display of various ODS information can be carried out by making into a background the "still picture" or the "animation" incorporated as mentioned above. Whether it uses against the background of the incorporated "still picture" or the "animation" can determine a user as follows.
[0133] That is, if the setup carbon button 504 of the remote controller 500 of drawing 12 is turned on, the icon for performing various kinds of setups on a screen will appear. The icon for display setting is in one of the icons of these.
[0134] There is selection of the background image of the display screen as the one section of display setting started by choosing this icon. There are the blue back, a capture, a jacket, etc. in this background image. If a "capture" is chosen from this inside, the still picture (or animation of a short-time loop formation) saved at the step ST 514 of drawing 19 will be chosen as a background image. Here, when the jacket picture is recorded on the disk 10 with which the equipment of drawing 1 was loaded, this jacket picture can also be used as a background image.

[Translation done.]

* NOTICES *

Japan Patent Office is not responsible for any
damages caused by the use of this translation.

1.This document has been translated by computer. So the translation may not reflect the original precisely.

2.**** shows the word which can not be translated.
3.In the drawings, any words are not translated.

DESCRIPTION OF DRAWINGS

[Brief Description of the Drawings]
[Drawing 1] The block diagram explaining the configuration of the DVD player in which the DVD menu display system concerning the gestalt of 1 implementation of this invention was included.
[Drawing 2] Drawing explaining the hierarchy DS of the DVD disk used by the DVD menu display system concerning the gestalt of 1 implementation of this invention.
[Drawing 3] Drawing explaining the hierarchy DS of the navigation pack recorded on the DVD disk of drawing 2 .
[Drawing 4] Drawing which illustrates the class of menu information recorded on the DVD disk of drawing 2 , and the layered structure of a menu.
[Drawing 5] Drawing explaining a part of user actuation control information recorded on the DVD disk of drawing 2 .
[Drawing 6] Flow chart drawing explaining the initial actuation in the case of reading recording information in the disk of drawing 2 by the DVD player of drawing 1 (usually before playback initiation).
[Drawing 7] Flow chart drawing explaining the processing in the case of reproducing the content of record from the disk of drawing 2 by the DVD player of drawing 1 (the 1).
[Drawing 8] Flow chart drawing explaining the processing in the case of reproducing the content of record from the disk of drawing 2 by the DVD player of drawing 1 (the 2).
[Drawing 9] Flow chart drawing explaining the processing in the case of reproducing the content of record from the disk of drawing 2 by the DVD player of drawing 1 (the 3).
[Drawing 10] Flow chart drawing explaining the processing in the case of reproducing the content of record of a cel from the disk of drawing 2 by the DVD player of drawing 1 .
[Drawing 11] Flow chart drawing explaining the processing which reads user actuation prohibition information in the disk of drawing 2 by the DVD player of drawing 1 .
[Drawing 12] General-view drawing which illustrates the remote control equipment concerning the gestalt of 1 implementation of this invention.
[Drawing 13] Drawing which illustrates the case where a navigation image is displayed in the equipment concerning the gestalt of 1 implementation of this invention.
[Drawing 14] Drawing showing the example as which the graphic remote control image was displayed in the equipment concerning the gestalt of 1 implementation of this invention.
[Drawing 15] Flow chart drawing explaining the example of operation using the graphic remote control image in the equipment concerning the gestalt of 1 implementation of this invention.
[Drawing 16] Flow chart drawing which explains a part of flow chart of drawing 15 in more detail.
[Drawing 17] Drawing explained taking the case of audio attribute information and subpicture attribute information among the management information used with the equipment concerning the gestalt of 1 implementation of this invention.
[Drawing 18] Drawing showing the content of seamless angle-type information in more detail among the management information used with the equipment concerning the gestalt of 1 implementation of this invention.

[Drawing 19] Flow chart drawing explaining the content of processing of the background-image incorporation system in the equipment concerning the gestalt of 1 implementation of this invention.
[Drawing 20] Drawing showing the example of a screen display accompanying processing of drawing 19 .

[Description of Notations]
1 -- DVD player; 2 -- MPU; 2A -- User interface creation section; 2B-- menu judging section; 2C -- Data memory ; (Data memory of the object for OSD, and others) 2 L--OSD processing section; 2M -- Capture Processing section; (Image incorporation) 3 --MPEG decoder section; -- 4 --D/A converter; -- 5 -- disk drive section; -- 6 -- system processor section; -- 6A-- data OFF Wakebe; -- 6B-- memory I/F section; -- 7 -- work-piece memory section; -- 8 --SP (subimage) decoder section; -- 9 -- audio decoder section; -- a 10 --DVD videodisk ; (Information storage medium) 11 -- video memory section; 12 -- Actuation key panel (Remote controller); -- 13 -- video processor section; -- 14 -- bus; -- 17 -- loudspeaker; -- 20 --TV monitoring device; -- 20 -- A - 20E-- monitor display; -- 21 -- root menu screen; -- 22 -- title menu screen; -- a 23 -- onscreen display (OSD) The used menu screen selection pointer.

[Translation done.]

* NOTICES *

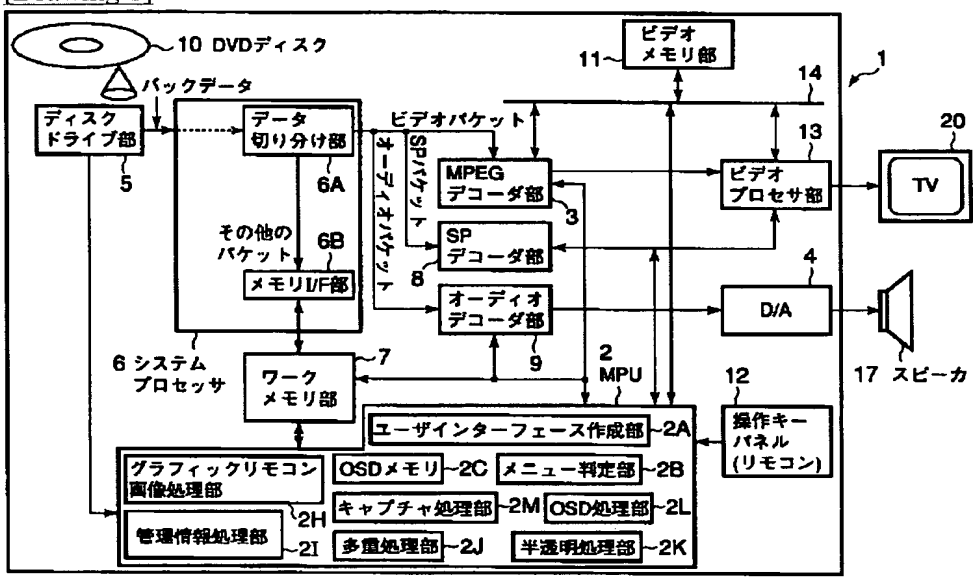
Japan Patent Office is not responsible for any
damages caused by the use of this translation.

1.This document has been translated by computer. So the translation may not reflect the original precisely.

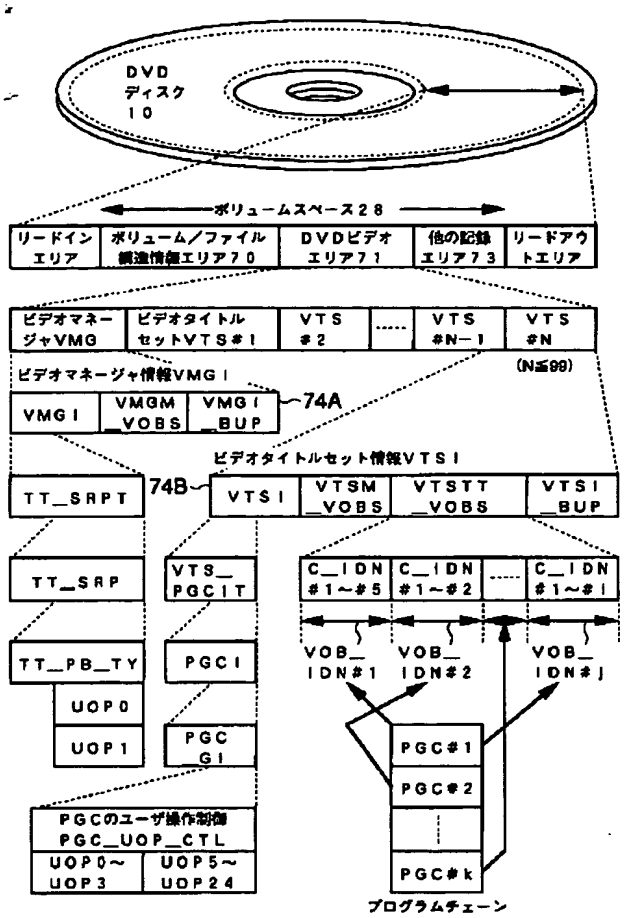
2.**** shows the word which can not be translated.
3.In the drawings, any words are not translated.

DRAWINGS

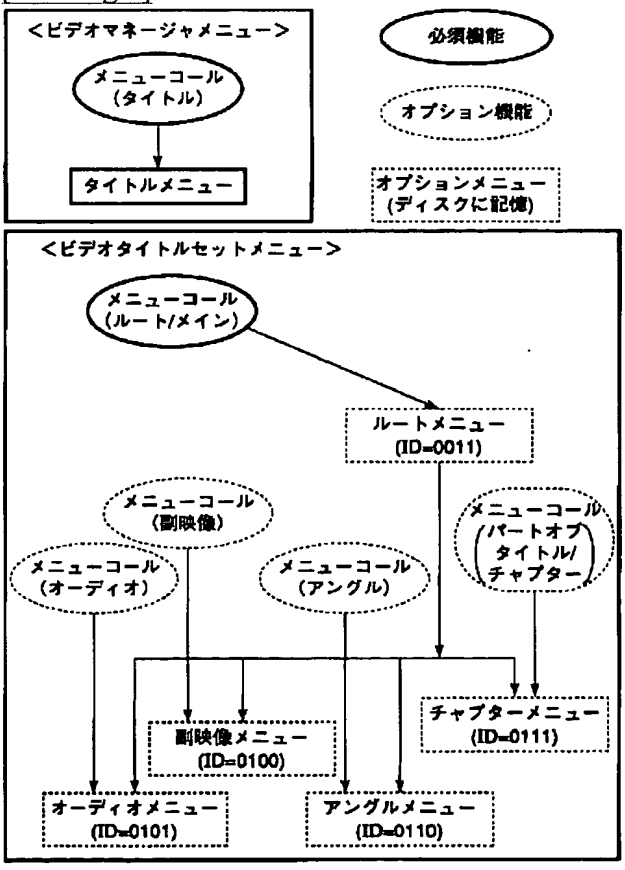
[Drawing 1]



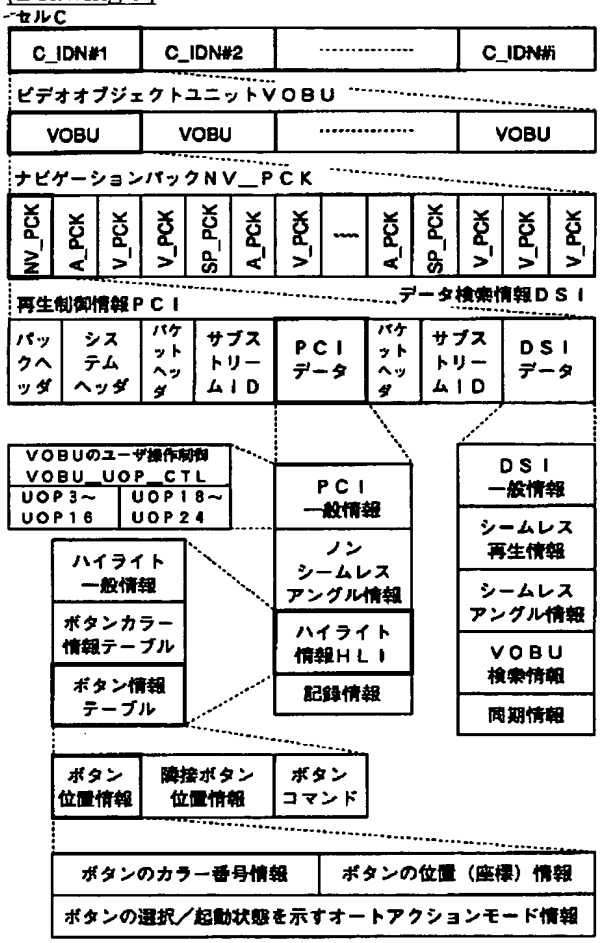
[Drawing 2]


DVD
ディスク
10
ボリュームスペース28
リードイン エリア
ボリューム/ファイル 構造情報エリア70
DVDビデオ エリア71
他の記録 エリア73
リードアウト エリア
ビデオマネージャVMG
ビデオタイトルセットVTS#1
VTS #2
VTS #N-1
VTS #N
(N≦99)
ビデオマネージャ情報VMGI
VMGI
VMGM_VOBS
VMGI_BUP
74A
ビデオタイトルセット情報VTSI
TT_SRPT
74B
VTSI
VTSM_VOBS
VTSTT_VOBS
VTSI_BUP
TT_SRP
VTS_PGCIT
C_IDN #1~#5
C_IDN #1~#2
C_IDN #1~#1
VOB_IDN#1
VOB_IDN#2
VOB_IDN#j
TT_PB_TY
PGCI
UOP0
UOP1
PGC GI
PGC#1
PGC#2
PGC#k
PGCのユーザ操作制御 PGC_UOP_CTL
UOP0~UOP3
UOP5~UOP24
プログラムチェーン

[Drawing 4]


<ビデオマネージャメニュー>
メニューコール (タイトル)
タイトルメニュー
必須機能
オプション機能
オプションメニュー (ディスクに記憶)
<ビデオタイトルセットメニュー>
メニューコール (ルート/メイン)
ルートメニュー (ID=0011)
メニューコール (副映像)
メニューコール (オーディオ)
メニューコール (アングル)
メニューコール (パートオブタイトル/チャプター)
チャプターメニュー (ID=0111)
副映像メニュー (ID=0100)
オーディオメニュー (ID=0101)
アングルメニュー (ID=0110)

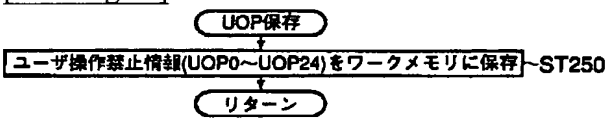
[Drawing 3]



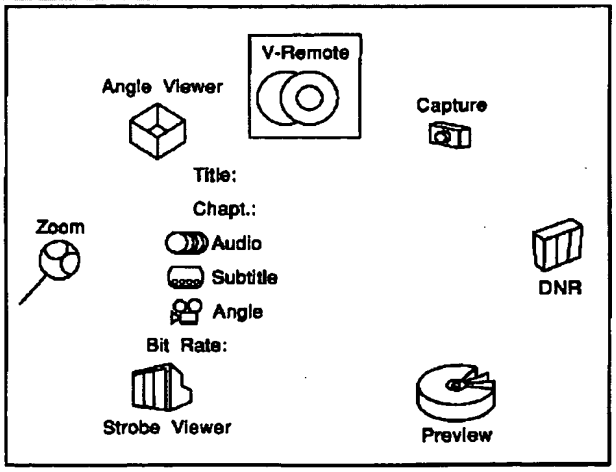
[Drawing 5]

UOP フラグ (UOP ビット)	ユーザ機能 (ユーザファンクション) の例	ユーザ操作 (UOP) 制御		
		TT_SRPT	PGCI	VOBU
UOP0	タイムプレイ ()、タイムサーチ ()	○	○	×
UOP1	PTTプレイ ()、PTTサーチ ()	○	○	×
UOP2	タイトルプレイ ()	−	○	×
UOP3	ストップ ()	−	○	○
UOP5	タイムサーチ ()、PTTサーチ ()	−	○	○
UOP8	フォワードスキャン ()	−	○	○
UOP9	バックワードスキャン ()	−	○	○
UOP10	メニューコール (タイトル)	−	○	○
UOP11	メニューコール (ルート)	−	○	○
UOP12	メニューコール (副映像)	−	○	○
UOP13	メニューコール (オーディオ)	−	○	○
UOP14	メニューコール (アングル)	−	○	○
UOP15	メニューコール (PTT)	−	○	○
UOP16	レジューム ()	−	○	○
UOP17	上下左右のボタン選択 ()	−	○	×
	ボタンの選択／起動 ()	−	○	×
UOP18	スチルオフ ()	−	○	○
UOP19	ポーズオン ()	−	○	○
UOP20	オーディオストリーム切替 ()	−	○	○
UOP21	副映像ストリーム切替	−	○	○
UOP22	アングル切替 ()	−	○	○
UOP24	ビデオ再生モード切替 ()	−	○	○

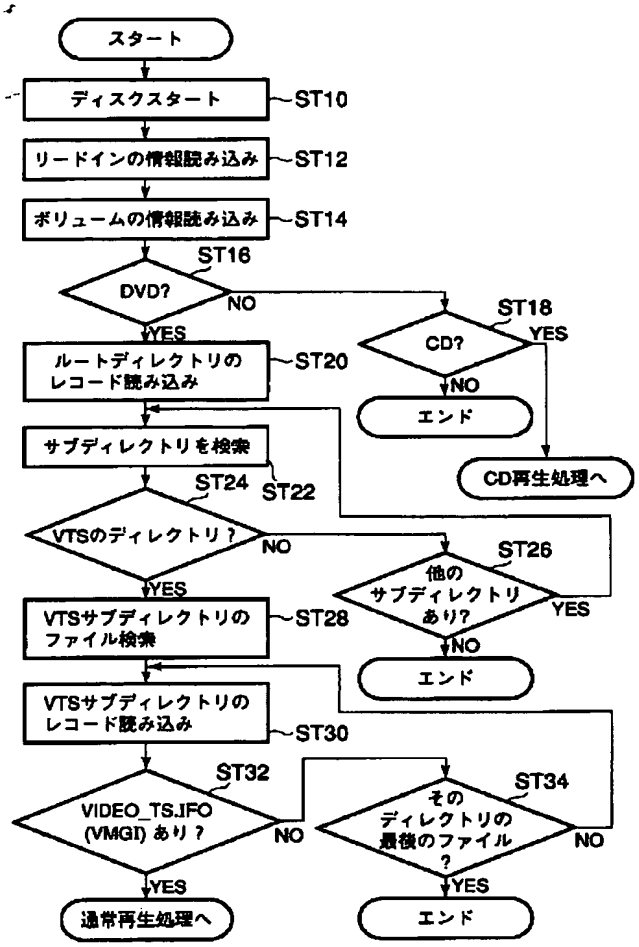
[Drawing 11]



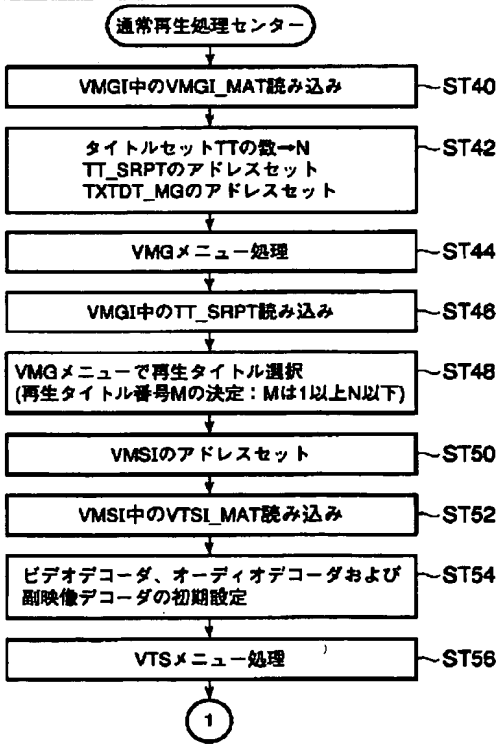
[Drawing 13]



[Drawing 6]

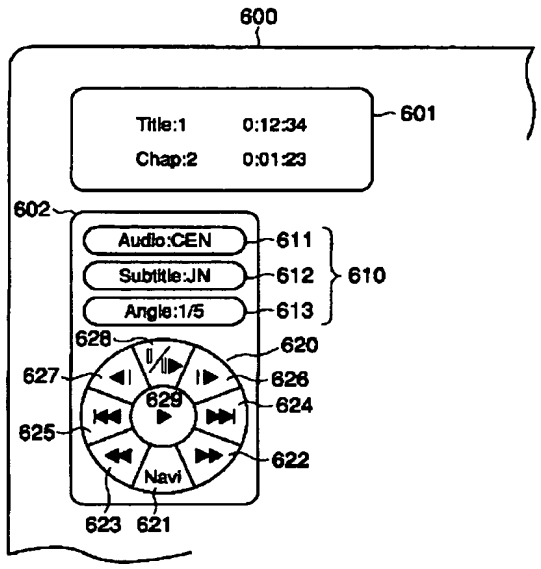


[Drawing 7]

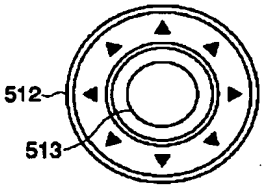


[Drawing 14]

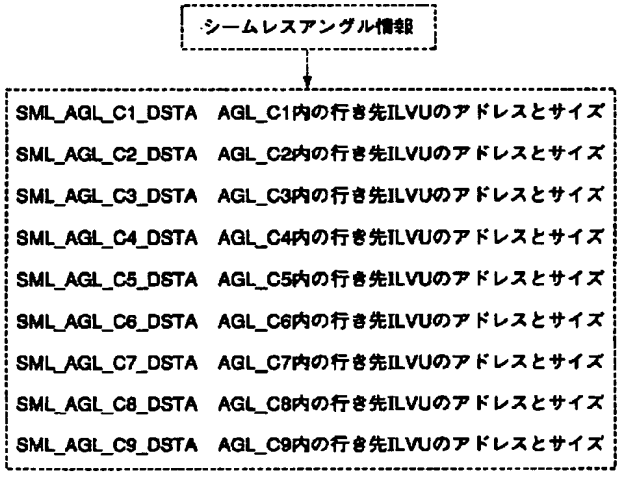
(A)



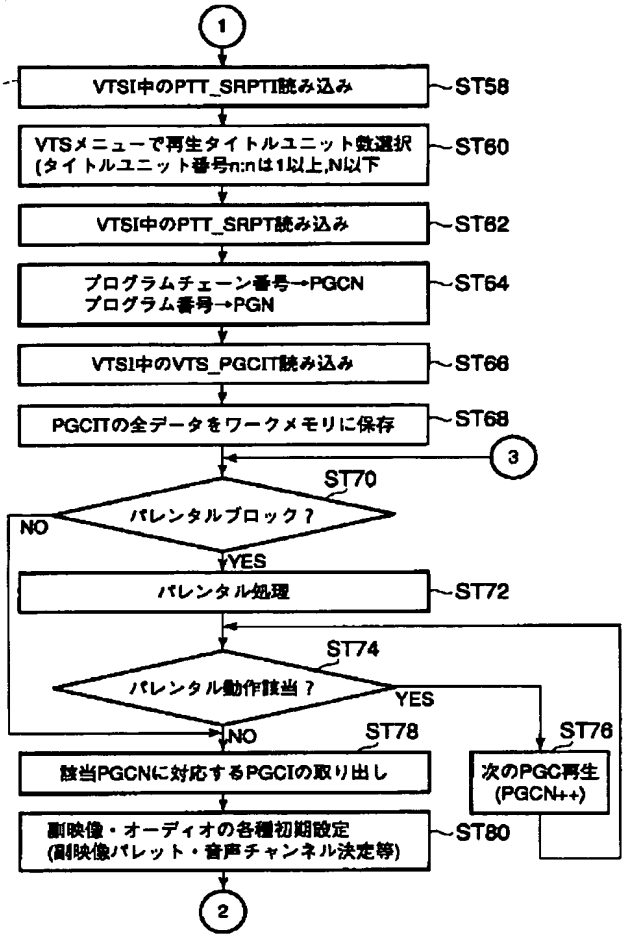
(B)



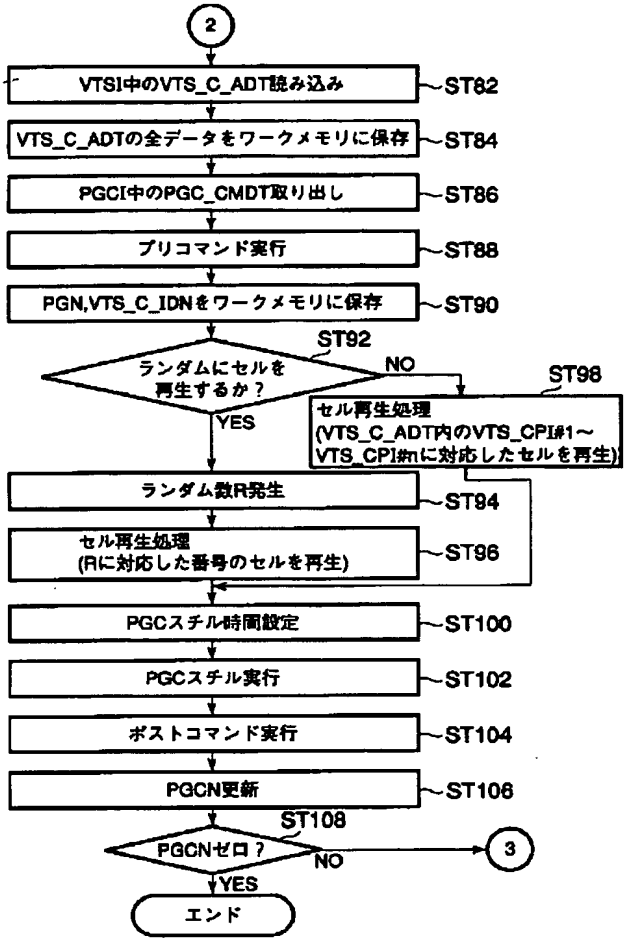
[Drawing 18]



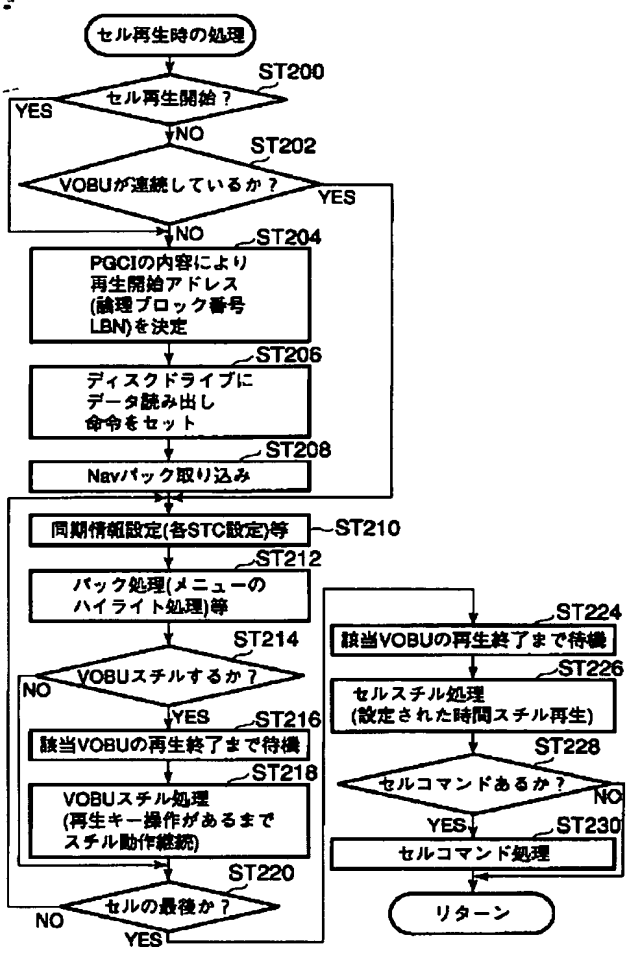
[Drawing 8]


1
VTSI中のPTT_SRPTI読み込み
ST58
VTSメニューで再生タイトルユニット数選択
(タイトルユニット番号n:nは1以上,N以下
ST60
VTSI中のPTT_SRPT読み込み
ST62
プログラムチェーン番号→PGCN
プログラム番号→PGN
ST64
VTSI中のVTS_PGCIT読み込み
ST66
PGCITの全データをワークメモリに保存
ST68
3
ST70
パレンタルブロック？
NO
YES
パレンタル処理
ST72
ST74
パレンタル動作該当？
YES
NO
ST78
ST76
該当PGCNに対応するPGCIの取り出し
次のPGC再生
(PGCN++)
副映像・オーディオの各種初期設定
(副映像パレット・音声チャンネル決定等)
ST80
2

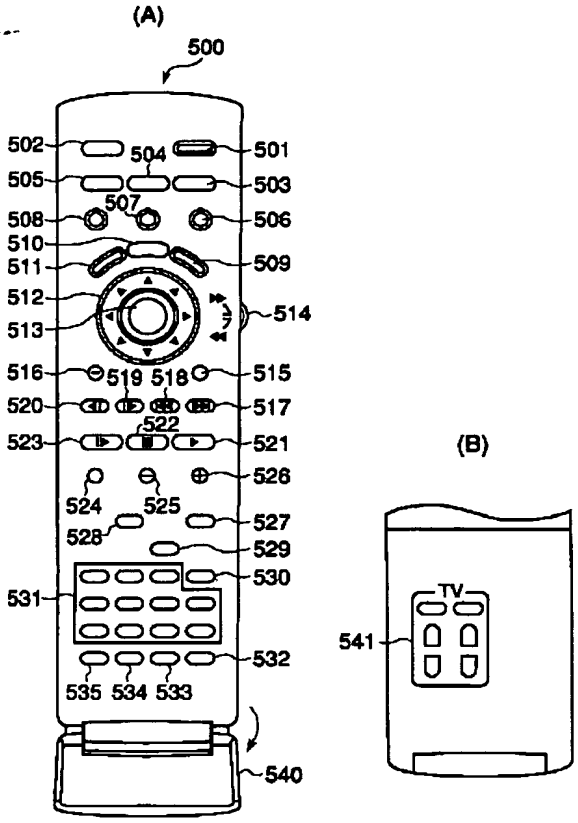
[Drawing 9]


2
VTSI中のVTS_C_ADT読み込み
ST82
VTS_C_ADTの全データをワークメモリに保存
ST84
PGCI中のPGC_CMDT取り出し
ST86
プリコマンド実行
ST88
PGN,VTS_C_IDNをワークメモリに保存
ST90
ST92
ランダムにセルを再生するか？
NO
YES
ST98
セル再生処理
(VTS_C_ADT内のVTS_CPI#1～VTS_CPI#nに対応したセルを再生)
ランダム数R発生
ST94
セル再生処理
(Rに対応した番号のセルを再生)
ST96
PGCスチル時間設定
ST100
PGCスチル実行
ST102
ポストコマンド実行
ST104
PGCN更新
ST106
ST108
PGCNゼロ？
NO
3
YES
エンド

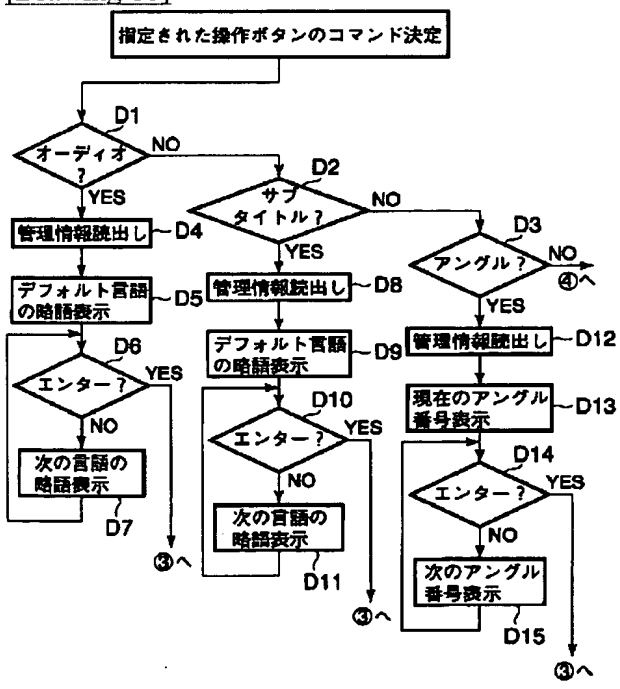
[Drawing 10]


セル再生時の処理
ST200
セル再生開始？
YES
NO
ST202
VOBUが連続しているか？
YES
NO
ST204
PGCIの内容により
再生開始アドレス
(論理ブロック番号
LBN)を決定
ST206
ディスクドライブに
データ読み出し
命令をセット
ST208
Navパック取り込み
同期情報設定(各STC設定)等
ST210
ST212
パック処理(メニューの
ハイライト処理)等
ST214
VOBUスチルするか？
NO
YES
ST216
該当VOBUの再生終了まで待機
ST218
VOBUスチル処理
(再生キー操作があるまで
スチル動作継続)
ST220
セルの最後か？
NO
YES
ST224
該当VOBUの再生終了まで待機
ST226
セルスチル処理
(設定された時間スチル再生)
ST228
セルコマンドあるか？
NO
YES
ST230
セルコマンド処理
リターン

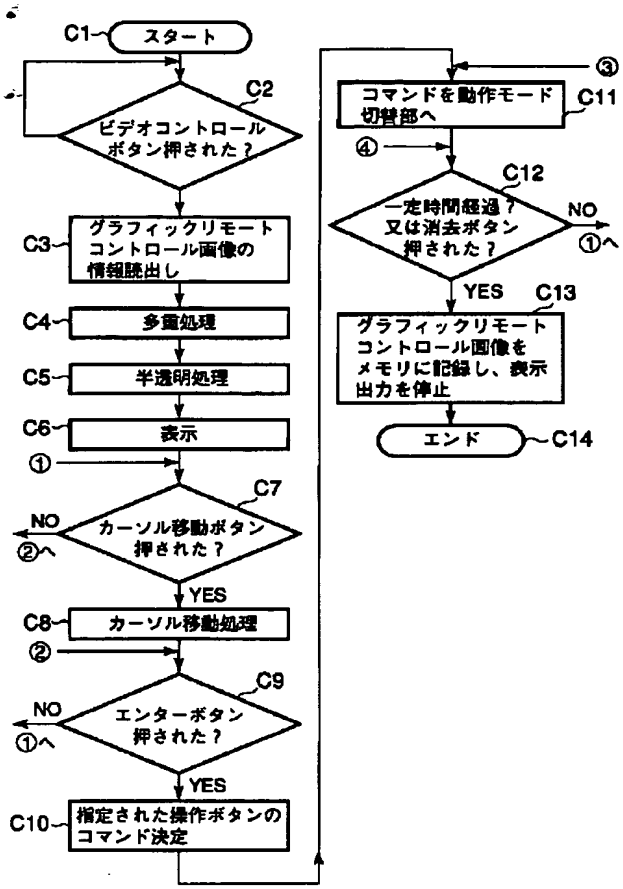
[Drawing 12]



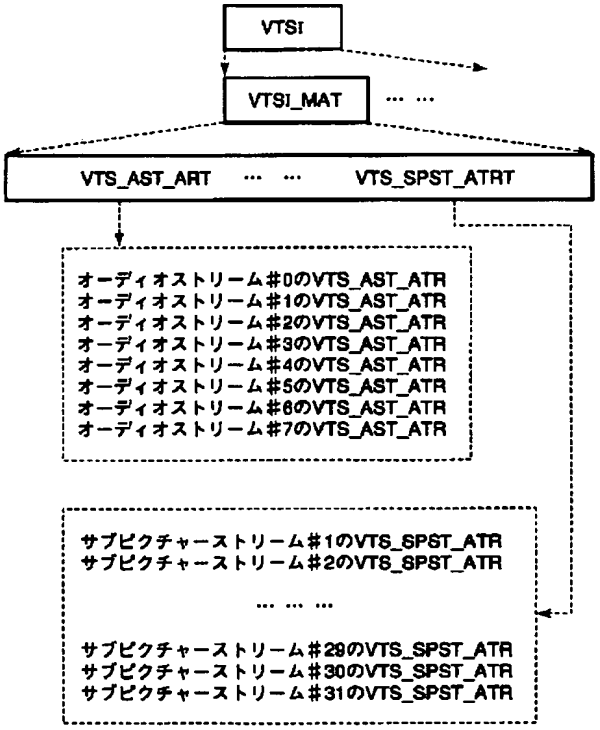
[Drawing 16]



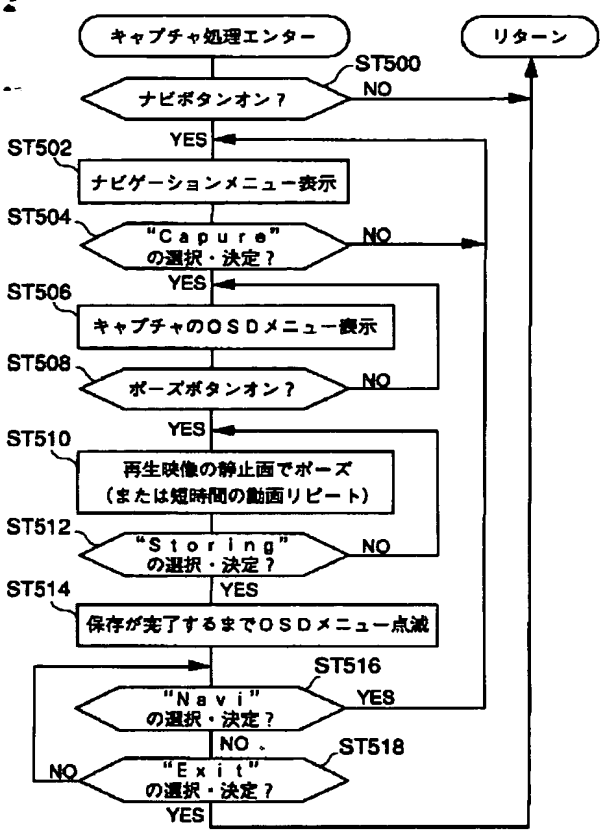
[Drawing 15]



[Drawing 17]

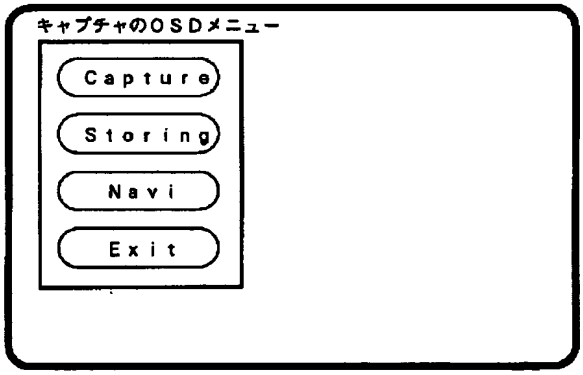


[Drawing 19]

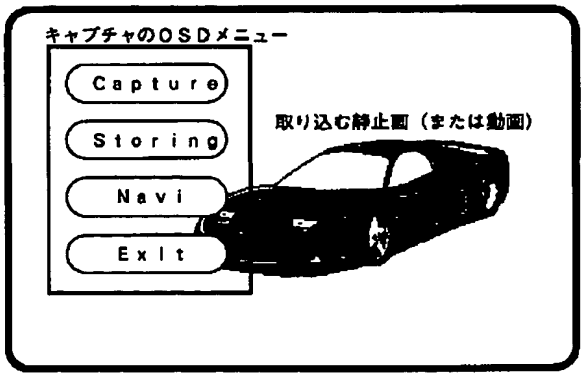


[Drawing 20]

(A)



(B)



[Translation done.]